

The Far Eastern Review

ENGINEERING + FINANCE + COMMERCE

THE PIONEER IN ITS FIELD

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries.

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FINANCE

COMMERCE

VOL. XVII

SHANGHAI, MARCH, 1921

No. 3

THE ROAD TO GOOD UNDERSTANDING

By George Bronson Rea

JOHN HAY'S PROPHECY:

"Whoever understands China—socially, politically, economically, religiously—
holds the key to world politics for the next five centuries."

EIIGHT years of idealism and refusal to face the facts or listen to wise counsels has brought its inevitable result. It is useless and wearisome to hold an inquest into the errors of diplomacy which have permitted the United States to drift stern first into the treacherous waters of Far Eastern intrigues. If the new administration is seeking light on these matters, Congress, with great profit to the country and our international relations, might appoint a special investigating committee to inquire into the responsibility attached to these errors, or, perhaps it would be more charitable and benefitting our national dignity to permit these dead issues to remain buried, and start afresh with a new outlook and an honest determination to employ our powerful influence to bring about a settlement of the great and complex problems which make for an upheaval in the Far East.

We stand to-day at the threshold of that Pacific Era so prophetically visioned by John Hay twenty years ago, but have failed to heed his counsel. If we except Ambassador Morris, who has lived up to the highest traditions of American diplomacy, the nation has not developed one practical Far Eastern Statesman to help guide it along the right path. We have been driven and led this way and that like sheep under the prodding or pleadings of dollar-diplomats, sentimental statesmen, petty politicians, paid propagandists, and concession seekers, all striving to mould the policy of the government to their own selfish ends. **IT IS TIME TO CALL A HALT.**

We cannot afford to make any more mistakes. We are facing a serious crisis in our Far Eastern policy. We cannot continue safely to concentrate our diplomacy in these regions against that of Japan. There is only one safe and sane road for us to follow. We must face the new Pacific Era with a full and accurate knowledge of what lies before us. The nation must know the truth.

On three occasions, when confronted with grave Far Eastern issues, President Wilson, through the state department, promised the nation he would call a conference to take up the whole case of China, and then at Paris, forgot his promises and concentrated the fire of the American delegation upon Japan. Hence the

Shantung question, with its aftermath of ill-feeling and unrest throughout the East. For reasons best known to himself, and against the advice of the highest authority in the American army, President Wilson insisted upon joint intervention and the dispatch of an American force into Siberia. Hence, the Siberian imbroglio, and the intensification of feeling between Japan and America.

President Wilson withdrew support from the American Group in 1913, because the terms of the loan then under negotiation seemed to be subversive of China's administrative independence. In 1914, he faced around and denied to China the exercise of her sovereign rights to construct her railways in her own way. In 1917, he initiated the movement for the organization of a new international financial consortium to do the very things he condemned in 1913 and 1914. The situation in China is far more serious than it was in 1913. If the consortium fails to function, conditions will become intolerable, and we will once more face the doctrine of the closed sphere, be compelled to give effect to our conception of the Open Door doctrine.

We cannot continue to drift. The time has arrived for an understanding. The European Powers are war-weary and in no mood to prolong a dangerous situation. China turns to us for friendly advice and assistance. Americans led her to defeat at Paris, and have done nothing to remedy matters except to hand over her troubles to an international financial syndicate. America has applied the paper doctrine that Mongolia is an "important part of China." The War Participation Pact which brought Japan and China together for common defense against the spread of Bolshevism in these regions has been cancelled. As a result, we have the picture of Urga in the hands of Ungern, and ten thousand peaceful Chinese reported massacred. If the memoirs of the late Willard Straight printed in the February number of "Asia" can be accepted as the truth, then our activities in these regions originated in the desire of Mr. Harriman to control a round-the-world transportation system, and the Chinchow-Aigun railway contract was conceived in order to compel Japan to sell out the South Manchuria line. As a result, Japan's position in

South Manchuria lies open to a menace from the direction of Urga on its one exposed flank.

President Wilson further insists that the integrity of helpless Russia shall be preserved at a time when it is obvious that Japan is seeking to check the spread of Bolshevism in Siberia by following the identical methods applied by other Powers in Europe for their own protection. The powers answer by recognizing the independence of Latvia and Estonia, while Premier Hara declares in the Diet that Japanese troops must remain in Vladivostok and along the railway to Harbin, for the protection of Japanese residents. The situation is far from being cheerful. On all sides black clouds cast their ominous shadows.

China is helpless. She looks to America for a Square Deal. Japan, beset with difficulties, is also hopeful and trustful that when her full case is known, she also will receive a measure of

sympathy and due justice from the other Powers. Let us face the situation like men and seek for light and knowledge in a general international convention where *all* sides of the questions can be fully and amicably discussed. Peace in the Pacific will never survive the strain of another attempt to convert an international conference into a court for the trial of Japan. She has a case, one that must be heard. Let us be fair to China and just to Japan. Let us get together and permit the cases of these two countries to go before the world. Then, and only then, will we be able to see behind the screen of secret and confidential propaganda and the arguments of selfish and special interests, and behold the road that must be followed in the future.

THE ROAD TO PERMANENT PEACE IN THE PACIFIC, TO A MUTUAL UNDERSTANDING OF PACIFIC PROBLEMS LIES IN THIS DIRECTION.

Sound Sense from Seattle

SEATTLE, Jan. 19. Expressing the wish that Seattle could become a silk manufacturing centre, thereby making possible cheaper costs of silk on this coast by saving transportation to the East and back, S. Endo, president of the Gunze Filature Co. and chairman of the Japanese silk commission, told the chamber of commerce that silk manufacture here is surrounded by ideal conditions. The speaker said 80 per cent. of the silk consumed in this country comes from Japan and 60 per cent. of it is sent through the port of Seattle.

Judge Thomas Burke said the time had come for sober-minded men of Japan and America to get around a table, put all their cards face up, look at the situations now causing distrust in both countries and then decide on the basis of even handed justice.

"Seattle, nearest American city to the Orient, has lived in peace for twenty-five years with Japan, a neighbor. There are hot heads in Japan as well as in America," he said. "It is a crime to-day to talk race hatred, which with religious hatred, has been the cause of almost every war. There is no difficulty which cannot be solved and solved right, if we use sober judgment. I am convinced that the wrong way to get a settlement is by abuse and insult. In both countries we should work for more than mere abstinence from war; we should learn to know the other nation."

"Seattle should not forget that when our own government failed to give us ships to give us world commerce, when American companies were operating from other ports on this coast that it was a Japanese steamship line which acted as handmaid for our commerce. It put us on the world's map."

Blunt Words from Britain

UNDER the title of "Japan Must Speak Out" the *Manchester Dispatch* of January 14, says editorially:

"To-day we print in another column a striking article by Commander Rundle, R.N., the naval expert, who asks the pertinent question: Shall history be allowed to repeat itself?

"Our contributor has been studying the strategic potentialities and political perils of the Pacific, and he has come to the conclusion that unless diplomacy acts energetically and at once we are heading straight for an early war, which will be as devastating and disruptive as the Great War of yesterday. He puts the question plainly to the directors of foreign policy: What are you going to do about it? The fighting man warns the politician!

"The issue is one which directly concerns the welfare of every man, woman, and child in this country. Lord Derby had the true vision of statesmanship when he recently reminded us that times had changed, and urged the man in the street, in his own interests, to watch foreign policy.

"Japan has come to the conclusion that she must expand. To blind our eyes to that fact is to court disaster. If we do admit

this fact, what steps are to be taken to satisfy her aspirations? A bold plan is needed, and a conference must be called to devise one. If we let matters drift we shall be compelled to embark on a huge naval programme. With Japan satisfied the way would perhaps be paved for a naval understanding with the United States, who then might be all the more ready to admit Great Britain's paramount need for sea supremacy. A simple question must, therefore, be put to Japan now: What do you want?"

Hammond Knows

According to a recent message from Washington, Mr. John Hayes Hammond, who is familiar with affairs in Russia, testifying before the House of Representatives, said "there is no necessity for us of giving California as an outlet of aliens. Should Russia give Japan the vast territory (Siberia) for her colonial development, all the questions would be settled. Russia acquiring a large sum from the sale, can build a new railway to China. Thus all the countries concerned will be greatly benefitted, America likewise being released from the troublesome complication. The downfall of the Soviet government is not far off. It is advisable for America to turn her attention towards Mexico and South America instead of Russia."

Cost of Flying

Interesting Figures

IF the elements of risk in itself did not cause a reluctance on the part of the ordinary land-lubber to trust either himself or his property to the caprices of the air and of the aeroplane, it is as yet unproven to him that the cost of air passage is unprohibitive. A flight to Paris from London has in the past been the pleasure, or alarming adventure, of those whose purse permitted, at least, so it would seem. Controversy does exist over the fact that air passage either of human or dead freight is at the present time abnormally high. A writer, Major W. T. Blake, in a recent periodical, maintains that those who might be in a position to answer the question as to how much it actually does cost to fly have remained silent. He states that vague estimates range from 3/6 per ton mile to about £2.10 per ton mile and that the public has been led to understand that a fair mean is about 30/- per ton mile. After repeatedly questioning this, and considering every possible cost, the writer states that this estimate is excessive. Gratifying to him and no doubt to all whose trepidation as to air passage is not such as to invite a nervous breakdown, comes some detailed figures from Capt. Acland, the head of the aviation department of Messrs. Vickers, Ltd. The figures show that the actual cost of flying, including fuel, wages, repairs, renewals and upkeep, depreciation, sundry expenses, and insurance, works out at 10s. 6d. per ton mile. The "Vimy" type as was used in crossing the Atlantic proved the instrument on which the test for figures was made.

The Real Significance of the Consortium

Japan's Great Sacrifice in the Interests of World Peace

THE outstanding feature of the long-drawn-out consortium negotiations is the firm stand taken by Japan in defending her economical and strategical position in Manchuria and Inner Eastern Mongolia, and the final arrangement whereby her bankers entered the combination on a basis of equality with the other powers, while still retaining control over lines and extensions *upon which substantial progress has been made* and surrendering her most important strategic railway to advance the cause of world peace.

The vital necessity of Japan to preserve her position in this part of Asia against the never changing policy of Russia has been fully explained in the columns of THE FAR EASTERN REVIEW. Under the title of "The Origin of China's Modern Troubles," this situation was clearly set forth in the January, 1921, number of this publication. It is impossible to intelligently grasp the arguments in support of Japan's national policy without the background provided by the above exposition of facts, and once they are understood the prevailing ideas about Japan's militarism and ambition to conquer or dominate China and encircle Peking with a network of strategic railways, must give place to a proper and more sympathetic appreciation of her vital necessity of preserving her national existence against the "come-back" of Russia.

When the new consortium idea was originated in 1917, the existence of the Li-Lobanoff Secret Alliance between China and Russia was still a secret, hinted at but vaguely in French diplomatic memoirs and other state papers. It was not until the Peace Conference that the Russians openly acknowledged the existence of this instrument, and then only to support certain rights in Manchuria. Other important facts concerning Russia's activities and policies in Eastern Asia were also revealed for the first time during the Peace Conference. Notably amongst these were the revelations of Mr. E. J. Dillon in his book, "The Eclipse of Russia," containing amongst other things, the inside history of the events leading up to the German occupation of Kiaochau. We also learned then of the existence of the secret agreements concerning Shantung entered into by Great Britain, France, Russia and Italy to support Japan's claims. All of these facts loudly proclaimed that the position of Japan in Manchuria and Mongolia could not be discussed from any idealistic viewpoint, or made to conform to President Wilson's program for ushering in a new era. The stern realities of the intense play of national and racial forces operating in these regions forbade any meddling by well-intentioned statesmen with the moves of Japan to preserve her independence and security against the intrigues of a combination formed to accomplish her ruin. The facts, thus brought to light, convinced intelligent students of the situation that nothing but direst necessity compelled Japan to retain her strategic foothold in this section of China, in order to combat step by step the underhand moves of Russia to outflank and destroy her. This has special reference to Japan's interest in the Taonan-Jehol Railway and its outlet to the sea, which has been cited as proof positive of her sinister designs upon Peking and evidence irrefutable of her program of "military aggression." Facts which Japan has been prohibited from inviting special attention to for fear of exposing her program to Russia, together with events which permit us to entertain no illusions, must however dispel from the minds of all right-thinking people, this distorted conception of Japan's alleged double-dealings. A careful analysis of the facts will prove to the satisfaction of any impartial mind that Japan's interest in Inner Mongolia came as a direct result of Russia's annexation of that territory in 1912, followed by the immediate opening of negotiations in Paris to obtain the funds required to press forward her strategic railways in this region and so

bring her armies nearer to Peking and enable them to approach Japan's position in Southern Manchuria from her unprotected flank. China's continued unrest, disorganization and general helplessness, made it imperative upon Japan to take immediate and energetic steps to safeguard her menaced position. On the other hand there entered her obligations under the Alliance with Great Britain. All evidence points to the fact that in 1912, Russia was preparing for another of her forward moves. At the time that she was amputating Mongolia from China, she was secretly pushing ahead her new military railway from Bokhara to the Afghan frontier. Evidence surrounding this forward move has come to light. So not only for her own protection, but to comply with her obligations to her ally, Japan was compelled to extend her influence into regions where she could more safely hold in check the coming menace.

The consortium negotiations reveal that the powers failed to fully sense the real reasons for Japan's tenacious insistence upon recognition of her "special rights" in these regions, and ignored the cardinal feature of all China's past railway agreements, i.e., it is impossible to dissociate these seemingly innocent economical loans from international politics. The mere fact that a new international consortium was being organized to pool all these concessions, rights and options, and in which Russia was conspicuous by her absence, was, in itself, sufficient justification for Japan to watch carefully her step, and while accepting the principle of the proposition, to insist upon the acceptance of reservations which would permit her complete liberty of action if it ever became necessary to defend her existence.

Japan's reluctance to accept off-hand America's ideas concerning the pooling of all railway and industrial rights and options must be viewed in the same light and from the same angle that now divides the American people on the merits of the league of nations. From our safe position, five thousand miles across the Pacific, Americans can readily assume an altruistic attitude and adhere to lofty principles in the application of traditional policies towards China and Russia. Whatever happens, the people of America will not be called upon to pay the price. These burdens will all be piled upon Japan, the least able to stand them. If the American people had the slightest idea they might be called upon under the operation of the consortium agreement to send an army across the Pacific, in all probability, they would have scrutinized the consortium negotiations as closely as did Japan, and demanded certain reservations such as they now insist must be written into the covenant of the league. That these questions have not been asked by the American public is due entirely to the fact that the administration learned well the lesson of the dangers attached to open covenants openly arrived at, and surrounded the consortium negotiations with the utmost secrecy. All of which has been highly dangerous to the preservation of peaceful relations, providing the opportunity to enemies of Japan to misrepresent her case and hold her up before the world as conspiring to push her influence into China with the idea of dominating that country.

As America is in a safe position, so Great Britain and France can afford at this time to approach the problem with more or less altruistic considerations. Their possessions in Asia are not menaced by any power violating the neutrality of China. But Japan could not. She had already paid the penalty for her trustfulness in the ability of China to act as a buffer, and common-sense arose above sentiment and the fourteen points, and admonished her to beware of any idealistic rearrangement of Eastern Asia as long as the position of Russia in Mongolia remained undefined.

Japan's position throughout the consortium negotiations can therefore be readily understood, but even this had to be clearly and confidentially communicated to her ally, before Downing Street grasped the full meaning of what she was holding out for. It is a remarkable commentary upon the vagaries of modern diplomacy, that while the British government was straining every effort to protect the approaches to India from a possible return of its inveterate and traditional Asiatic enemy, that Earl Curzon, the highest British authority on Asiatic problems and policies, should have to be reminded that Japan's one menace to her national existence came from the same quarter. The British foreign minister entirely overlooked the important fact that Japan's interest in Eastern Mongolia dated from the year that Russia was secretly pushing her new military railway towards the north-east frontiers of India, and seeking loans in Paris to facilitate her advance upon Peking. Viscount Chinda was finally compelled reluctantly to throw diplomatic courtesy to the winds, in order to make clear the case for Japan. It is well to emphasize this basic Japanese position. He said, in effect, that the Taonan-Jehol line with its branch to the sea, was projected solely for the purpose of making it a means of common defence on the part of China and Japan against foreign invasion coming from the direction of Urga, in addition to facilitating the economic development of the territory. He expressed surprise and regret that America and Great Britain interpreted this line as an eventual menace to Peking, and in view of the common interest of all the powers, made clear that Japan would make no objection to pooling the line within the consortium, but still hoped that the British government would support Japan in her position. Viscount Chinda laid stress on the desire on the part of Japan to build these two essential lines as speedily as possible, and if the other groups in the consortium were reluctant to join in financing it that Japan be permitted to undertake this single-handed. Viscount Chinda could not know at that time, that this line, or its counterpart, the Chinchow-Aigun which the American group controlled was designed for the sole purpose of undermining Japan's position in Manchuria, and as a lever to force her to sell out the South Manchurian line to the Harriman group.

The insistence of Japan upon the right to construct these two lines as speedily as possible and to finance them independently, if needs be, brings under the lime-light the urgent reasons for their construction as an imperative strategical measure, for the preservation of Japan's position and as a basic line of defence for the further opening up of Mongolia to the colonization of the yellow race. That Japan finally accepted the assurances of her allies to respect her vital economical and strategic rights in this region is perhaps the most momentous feature of the entire consortium program. If this strategical outer line of defence is now to pass under international financial control it must carry with it the obligation of international armed support in the event that the neutrality of the line or the region is ever menaced from the direction of Urga. Great Britain, France, and the United States, have therefore assumed a grave responsibility in coercing Japan to recede from her position and surrender her rights to the Taonan-Jehol line to the consortium, and must, in honor, accept the corollary, and dispatch their armed forces to the region in the event that Japan is ever called upon to defend her position and preserve the territorial integrity of China. Present indications point to the inevitable occasion when, if the consortium holds together long enough, when the boys of America may again be called upon to cross the ocean and take part in a war of the races on the side of Japan and China in order to preserve Mongolia for the expansion of the yellow men.

Herein lies the gravity of the political complications created by the successful organization of the consortium. America and Great Britain have given birth to a new doctrine that we must be prepared to uphold unless wiser counsels prevail and a way found to settle the matter on a different basis. The consortium negotiations brought out the definite statement by Mr. Lamont and Earl Curzon that the American and British governments hold that "Mongolia and Manchuria are important parts of China." At the time Mr. Lamont made this statement, Chinese and Japanese troops

were co-operating in Outer Mongolia for the purpose of ousting the Russians and restoring this province to China. The declaration was, therefore, inconsistent with existing conditions, the application of a paper doctrine to a desperate problem that Chinese and Japanese armies were then engaged in solving on the ground. Under the circumstances, how the American and British governments expected China to retain control over "one of its most important provinces" without the application of force passes all imagination. The inconsistency of the American stand was perhaps more clearly brought out in a report of the state department of November 23, 1919, and published in the *New York Times* of that date, which called upon the British government to exert a reassuring influence on its Ally in the matter of the consortium, and wound up by saying "the United States would be happy to co-operate in arranging for an immediate advance to China for the purpose, amongst other things, of the disbandment of the Chinese troops raised under the Sino-Japanese war participation bureau, and those troops now being employed against Outer Mongolia, which China is seeking to recover from Russia." Mr. Lamont in June, and Earl Curzon in August, declared that "Mongolia is an important part of China" and could not be excluded from the scope of the consortium, while on November 23, the state department declares that it is ready to permit the consortium to make an immediate advance to China for the purpose of disbanding the troops operating to restore this territory to Chinese sovereignty! The two declarations are incompatible. If Mongolia is considered to be a permanent part of China, then it will require something more than a mere paper declaration to make it so. When this same paper declaration provides for the disbandment of troops operating to give practical effect to the doctrine, then the only conclusion that can be safely arrived at, is that America and Great Britain were opposed to any Japanese co-operation with China in order to restore Mongolia to its rightful sovereign. Events are now transpiring in Mongolia that proclaim loudly the doctrine is premature. We cannot recall that such friendly solicitude for the preservation of China's integrity was ever formally or officially expressed by any of the great powers when the armies of the Czar stood behind Mongolia's declaration of independence and the corrupt deal which brought the country under the protection of Russia. Nor do we recall that any serious objection was raised in 1916, when Russia protested the construction of railways in Inner Mongolia on the grounds that such lines were in direct conflict with her established policy to close this territory to Chinese colonization. It remained, however, for the powers to take a firm stand in defense of China's interests, only when these seemed to be menaced by Japan. Such diplomatic inconsistencies and wilful ignoring of the vital problems of Japan have contributed to the formation of a settled conviction in the minds of intelligent Japanese that their higher interests are being subordinated to those of Russia, a clear case of the solidarity of the white against the yellow man. Barred out of the white man's territories in the Pacific and forced into Asia to seek the future of the race, Japan finds on all sides the operation of the same set policy to oppose her expansion and defeat her plans for defense. We may be wrong, and if so, would gladly correct the error, but to our knowledge, not one word of honest protest was heard from America or Great Britain when Russia gobbled Mongolia in order to facilitate her descent into China and designs upon Japan, nor did China violently object or make any serious effort to save her territory. As soon however, as Japan takes the necessary steps to protect herself against a "menace from the direction of Urga," the western powers with common accord evince a sudden and deep interest in China's integrity and formally place on record that "Mongolia is an important province of China" in order to circumscribe Japan's preparations to defend her national existence.

The declaration, however, clears the international political atmosphere in regard to the status of this debatable territory, which some time in the not distant future will become the battle ground of the races, the cockpit in which Mongol and Slav will contend for supremacy and the right to exist. A firm declaration of this nature should carry with it the implied assurance to China

and Japan, that if it becomes necessary, the combined forces of the consortium powers will be employed to give effect to this status of Mongolia and preserve the province to China. In the event of future Russian aggression or "peaceful penetration" in Mongolia, this declaration would seem to bind the powers to come to the full support of Japan to guarantee the integrity of China and the security of her own position.

In this somewhat belated declaration China and Japan are therefore to be congratulated, but at the same time it opens up the equally important question of how far the powers will go in support of their policy, if ever put to the test. As matters now stand, it is safe to predict that no American, British, or French army, will ever be disembarked upon the shores of Asia to defend the integrity of China in the far-off depths of Mongolia or Sinkiang. Financial or economical pressure by the league of nations can never influence Russian movements in Central Asia or along the far-flung Mongolian borders and Altai slopes. If this be true, it would then appear that China will have to rely entirely upon herself to protect the territory which the powers now declare is one of her most important provinces. This, in turn, opens up the whole question of China's ability to cope with her northern neighbor, and the urgent necessity of arriving at some understanding whereby China and Japan can co-operate for the common defense of territories that will assure to the yellow race its right to exist and expand within the lands set aside by nature as their peculiar habitat.

While this is being written, comes news of the fall of the Mongolian capital and the utter collapse of the Chinese forces. The Russians are again in Mongolia, and a bankrupt Chinese government is ordering armies from all sides for the recapture of Urga. There is no escape from the logic of the situation. America, Great Britain, and the pressure of Chinese public opinion, have compelled the cancellation of the Sino-Japanese war pact for the common defense of these territories. Japan has been coerced into surrendering to the consortium her right to defend herself in South Manchuria along the Taonan-Jehol line, or Inner Mongolian borders. Mongolia is declared to be an important province of China, as far as Japan is concerned, but the law of the powers cannot be extended to Russia. The time may not be far distant, when America and Great Britain will be compelled to take action to give effect to the new doctrine, or step aside while Japan and China settle the future status of the territory to their own satisfaction.

Right here, it is well for us to pause and give serious thought to questions that are bound to obtrude after digesting the above statement of facts. The policy of the consortium powers holds that Mongolia and Manchuria are integral and important parts of China. The consortium was organized to establish, amongst other things, the sovereignty of, and to strengthen, the central government of China. For all practical purposes Japan has been prohibited from operating alone or in conjunction with China to defend herself against a "menace from the direction of Urga." Therefore, China must step into the breach and discharge her international obligations by defending her own integrity. All perfectly proper. We now face the facts. Urga, the capital of Mongolia, has been captured by the reactionary Russian army under Baron Ungern. The Chinese troops have fled. Ten thousand peaceful Chinese, says the report, have been massacred. China is now called upon to defend her territory. The government is bankrupt. There are no funds to wage successfully a campaign in Mongolia. Question, (1) Will the consortium advance a loan of fifty, or even ten million dollars, to enable China to carry on the necessary military operations to give effect to its doctrines? (2) In the event that the consortium refrains from financing China in a military campaign in Mongolia, will the American and British governments uphold its doctrine and dispatch an army to assist China? Great Britain or America cannot consistently call upon Japan to undertake this task alone after their declarations, without surrendering their position and recognizing her paramount interest in these regions. (3) If a "menace

from the direction of Urga" spreads and approaches the limits of southern Manchuria, or occupies territory along the line of the projected Taonan-Jehol railway, will the consortium powers prohibit Japan from taking the necessary steps to protect herself and send their troops into the region? In other words, how far is Japan expected to expose herself to attack in order to meet with the desires of the other powers? China's integrity must be preserved. That is basic. Japan has subscribed to that doctrine. If China cannot guarantee her neutrality or defend her integrity, what is the answer? China has an excellent case, though impaired by the inability to defend herself. Who, then, will protect her? Japan has an excellent case, notwithstanding the mistakes of her military, but one opposed to the policies of America and Great Britain. What is just? Is it just that America and Great Britain should impose their views upon Japan, when they reject and resent any interference with their own vital policies? What should be done? Will we permit Japan to solve her own problems in her own way, or will we insist upon sending an army into Mongolia and Manchuria and so guarantee her position from any possible menace? Here we are getting down to questions that must be answered and answered rightly, and which may only be decided when we know all sides of the problem. If we are seeking peace in Asia, and not war, then the situation loudly calls for calm deliberation before a conference of the interested powers. The sooner these questions are answered, the better.

We can answer one of these questions right here. If the consortium powers are unwilling to support their doctrines and finance by armed force (this they are in honor bound to do in the event that Manchuria is ever menaced through a conflict in Mongolia) they may escape this obligation by adopting the railway program outlined in "A Square Deal for China." By surrendering all these old political railway rights to China in exchange for an equal mileage in a new system of national railways, the political character of the consortium holdings disappears, and it stands simply as a business organization to conduct business with the Chinese government on a business basis. As long as these old political railway rights and privileges remain pooled in the consortium, the powers concerned cannot escape the obligation imposed upon them to defend these rights. Once, however, they are all surrendered to the Chinese government, their political obligations cease and China becomes responsible for the maintenance of her neutrality. The American people would never consent to the dispatch of an army across the Pacific to protect a railway in Manchuria or Mongolia, especially when the American bondholders are amply guaranteed by the good faith and general revenues of the central government in addition to a mortgage on the physical properties and earnings of the lines. Yet under the present consortium plan this is what we are in honor obligated to do, or permit Japan to act independently in these regions. From more angles than one, it would seem wise on the part of the consortium to be just to China, by surrendering these old political rights for equal mileage in a new national system. If the consortium fails to take such action, then it is another question that could come before a general conference for discussion and adjustment.

It becomes clear that Japan's intense interest in the Taonan-Jehol line arose from a desire to protect her position and facilitate China's penetration into regions that have been closed to her in the past, and which must otherwise remain closed to her in the future. A glance at the map will also make clear Japan's interest in the Taonan-Ssupinkai, the Taonan-Changchun, the extension of the Changchun-Kirin line to the sea and the Kaiyuan-Hailung-Kirin line, all opening up new country to development, and at the same time fulfilling the more important mission of strategic barriers, which confront Russia from Tsitsihar to Vladivostok. If any point in this barrier from the sea to Taonan should remain unprotected, it opens the door for Russia to walk through, destroy Japan's position, and force her back once more to the banks of the Yalu.

If the American and British governments will face the situation in the light of these facts and lend their friendly co-operation

to the furtherance of Japan's plan for the real preservation of China's integrity and her own security, the great cause of world peace will be materially advanced. This is the true function of an international consortium in assisting China to establish a representative government and maintain her sovereignty over her outlying provinces. The purely economic and commercial problems of China will solve themselves automatically under the guiding hand of the consortium leaders and an honest representative government, in which the military is subordinated to the civil authority and the power to make loans vested in a parliament and responsible cabinet. Administrative loans can then be advanced without fear of their being diverted to the capacious pockets of military grafters, railways will be built, industries established and China slowly led along the road to stability and prosperity. But unless attention is also given to Japan's vital problem and China assisted to regain full sovereignty over her largest outlying provinces, the consortium program will in the end, prove abortive, and loans advanced for other purposes become a total loss. The consortium must serve as an international instrument for Asiatic peace as well as for the economic reorganization and development of China. The same principles that guided the drafting of the Peace Treaty insuring to France, Italy, Britain and other nations guarantees that their frontiers will be protected against future aggression, must be applied to China, not only for her own sake, but for the security of Japan. If such guiding principles are ignored, then the other powers must expect that Japan will insist upon her right to take the necessary single-handed steps to provide her own guarantees.

This is the real significance of the consortium negotiations, Japan has protected her position, in the same way that her allies have applied the law of self-preservation in other parts of the world, and has received their assurance that her vital interests will be respected. It closes a disagreeable chapter in international diplomacy that might well have led to serious complications because of the absence of mutual understanding and to the adherence to secrecy that characterized the negotiations. We enter upon a new epoch in Far Eastern politics. Japan and America are now partners. The only danger that the harmony of the consortium may be destroyed lies in the reluctance of China and her friends to accept the logic of the facts. Strenuous efforts are being made and will continue to be made to keep alive the agitation against Japan and create the suspicion in the minds of her partners that she is working against them in an underhand manner. Were China left to her own inclinations, it would not be difficult to bring about a happy rapprochement with Japan and cement these relations by a new understanding that would receive the full support of the other great powers. It is almost hopeless, however, to look for such a practical and statesmanlike outcome to years of misunderstanding and cross-purposes as long as secret and confidential propaganda emanating from Peking continues to poison the international atmosphere.

Turning from the purely political to the practical business side of Japan's exclusion of her other lines in Manchuria from the scope of the consortium, this is in exact accord with the provisions of Article 2, of the Agreement signed at Paris on May 12, 1919, which states that: "Existing agreements relating to industrial undertakings upon which it can be shown that substantial progress has been made may be omitted from the scope of this agreement." Pursuant to this strictly business compact, the Japanese have excluded those lines which act as direct feeders to the main South Manchuria railway, and upon which substantial progress has been made. The Kirin-Huining and Taonan-Changchun lines, while apparently entirely new and distinct propositions are simply the logical extensions of the completed Changchun-Kirin Railway; the Chengchiatun-Taonanfu line is the extension of the Ssupingkai-Chengchiatun line now in operation. These lines come within the direct application of Article 2 of the consortium agreement. The Kaiyuan-Hailung-Kirin feeder is so vitally a part of the South Manchuria system, that it could not safely be included in the consortium without giving rise to serious clashes of interest in the

very heart of Japan's defensive and strategical zone contiguous to Russia's Far Eastern military capital at Harbin. The Sin-munfu-Mukden line, while under a Japanese loan agreement, has been operated for many years as an integral section of the Peking-Mukden Railway under the direct management of the Chinese ministry of communication.

There was never any real objection on the part of the other powers to Japan's claims to special consideration in the control of these lines, but it required considerable correspondence to make this point absolutely clear to the Tokyo authorities.

The whole controversy surged around the question of the inclusion or exclusion of the Taonan-Jehol and the Taonan-Changchun lines, and the Japanese government held out to the last moment against all arguments that would deprive them of this means of self-defense in the event of an emergency. The problem was solved in Japan through the efforts of the Japanese bankers led by Mr. J. Inouye, governor of the Bank of Japan, and other firm friends of America who influenced the government and military leaders to recede from their position on the Taonan-Jehol line and trust to the good-faith of America and their ally, to see that Japan's vital interests were never placed in jeopardy by the operation of the consortium. So sure were the Japanese bankers that they could ultimately arrive at a happy and harmonious solution without unduly injuring the higher interests of the empire, that Mr. Lamont was informed that his plan would be accepted. Upon this assurance Mr. Lamont voyaged to the Far East and happily concluded upon the ground in personal contact with the Japanese leaders, the agreement which has finally brought the two nations into harmonious co-operation and partnership for the furtherance of the consortium program.

When viewed in the light of all the facts surrounding these negotiations the final credit for their successful outcome must be divided by Mr. Lamont with Mr. Inouye and the leaders of the Japanese group, whose whole-hearted acceptance of his plan, friendly desire to co-operate with America and trust in the good-faith of the American government, finally overcame the sterner opposition of their own military element into whose hands has been entrusted the safety of the empire against attack "from the direction of Urga." It is too early to indulge in prophecies, but it is safe to say that Japan's surrender of her most vital line of outer defense to the consortium in order to demonstrate her friendship with America and China, will stand as one of the highest examples of national self-sacrifice to the cause of world peace and Pacific harmony.

G. B. R.

Official Text of the Consortium Agreement

The official text of the new consortium agreement signed on October 15, 1920, is as follows:—An agreement made the fifteenth day of October, 1920, between

The Hongkong and Shanghai Banking Corporation, having its office at 9 Gracechurch Street in the City of London (hereinafter called "the Hongkong Bank") of the first part,

The Banque de L'Indo-Chine having its office at 15 bis Rue Laffite, Paris (hereinafter called "the French Bank") of the second part,

The Yokohama Specie Bank Limited having its office at Yokohama in Japan (hereinafter called "the Japanese Bank") of the third part, and,

Messrs. J. P. Morgan & Co., Messrs. Kuhn Loeb & Co., the National Bank, New York, the Guaranty Trust Company of New York, Messrs. Lee, Higginson & Co. of Boston and the Continental and Commercial Trust and Savings Bank of Chicago (hereinafter called "the American Managers") acting as to the United Kingdom by Messrs. Morgan, Grenfell & Co., of 22 Old Broad Street in the city of London and as to France by Messrs. Morgan Harjes & Co. of Paris of the fourth part.

Whereas the Hongkong Bank, the French Bank, the Japanese Bank and the American Managers are acting for the purposes of

this agreement as the representatives of the British, French, Japanese and American groups respectively,

And whereas the British, French, Japanese, and American groups were formed with the object of negotiating and carrying out Chinese loan business,

And whereas their respective governments have undertaken to give their complete support to their respective national groups the parties hereto in all operations undertaken pursuant to the agreement hereinafter contained and have further undertaken that in the event of competition in the obtaining of any specific loan contract the collective support of the diplomatic representatives in Peking of the four governments will be assured to the parties hereto for the purpose of obtaining such contract,

And whereas the said national groups are of the opinion that the interests of the Chinese people can in existing circumstances best be served by the co-operative action of the various banking groups representing the investment interests of their respective countries in procuring for the Chinese government the capital necessary for a program of economic reconstruction and improved communications,

And whereas with these objects in view the respective national groups are prepared to participate on equal terms in such undertakings as may be calculated to assist China in the establishment of her great public utilities and to these ends to welcome the co-operation of Chinese capital.

Now it is hereby agreed by and between the parties hereto as follows:—

1. Each group reserves to itself the right of increasing or reducing the number of its own members but so that any member of a group dropping out shall remain bound by the restrictive provisions hereof and any member of a group coming in shall become subject to the restrictive provisions hereof and so that no group shall (without the consent of the others) be entitled to admit into its group a new member who is not of its nationality and domiciled in its market. The admission of any new group shall be determined by the parties hereto subject to the approval of their respective governments.

2. This agreement relates to existing and future loan agreements which involve the issue for subscription by the public of loans to the Chinese government or to Chinese government departments or to provinces of China or to companies or corporations owned or controlled by or on behalf of the Chinese government or any Chinese provincial government or to any party if the transaction in question is guaranteed by the Chinese government or Chinese provincial government but does not relate to agreements for loans to be floated in China. Existing agreements relating to industrial undertakings upon which it can be shown that substantial progress has been made may be omitted from the scope of this agreement.

3. The existing agreements and any future loan agreements to which this agreement relates and any business arising out of such agreements respectively shall be dealt with by the said groups in accordance with the provisions of this agreement.

4. This agreement is made on the principle of complete equality in every respect between the parties hereto and each of the parties hereto shall take an equal share in all operations and sign all contracts and shall bear an equal share of all charges in connexion with any business (except stamp duties and any charges of and in connection with the realization by the parties hereto in their respective markets of their shares in the operations) and the parties hereto shall conclude all contracts with equal rights and obligations as between themselves and each party shall have the same rights privileges prerogatives advantages responsibilities and obligations of every sort and kind. Accordingly preliminary advances on account of or in connection with business to which this agreement relates shall be borne by each of the parties hereto in equal shares and each of the parties hereto shall be entitled to participate equally in the existing agreements and will offer to the other parties hereto an equal participation with itself in any future loan business falling within the scope of this agreement. Should

one or more of the parties hereto decline a participation in the existing agreements or any of them or in any such future loan business as aforesaid the party or parties accepting a participation therein shall be free to undertake the same but shall issue on its or their markets only.

5. All contracts shall so far as possible be made so as not to impose joint liability on the parties hereto but each of the parties hereto but each of the parties hereto shall severally liquidate its own engagements or liabilities. The parties hereto will so far as possible come to an understanding with regard to the realization of the operations but so that such realization in what ever manner this may take place shall be for the separate benefit of each of the parties hereto as regards their respective participations therein and so that each of the parties hereto shall be entitled to realize its participation in the operations only in its own market it being understood that the issues in the respective markets are to be made at substantial parity,

6. Any one or more of the parties hereto who shall have accepted its or their participation in any business hereunder shall be entitled by notice in writing to call upon the other or others of the parties hereto who propose to issue their own respective participations to issue for the account of the party or parties giving such notice or notices either all or one-half of the amount which may constitute the participation of the party or parties giving such notice or notices and the party of parties so called upon shall issue the said amount or amounts (hereinafter called "the residuary participation") specified in such notice or notices upon and subject to the terms and conditions following, viz.:—

- (1) Such notice or notices must be received by the other or others of the parties hereto before the execution of the final agreement for the issue of the loan or (in the case of an issue of a part only of the loan) of so much thereof as the parties hereto may from time to time agree to issue.
- (2) The party or parties to whom such notice or notices shall have been given shall be entitled to decide among themselves and without reference to the party or parties giving such notice or notices as to which one or more of them shall issue the Residuary Participation but in default of any such decision they shall issue the same equally between them.
- (3) In issuing the residuary participation no distinction shall be made between the residuary participation and the amount or amounts issued on its or their own account by the party or parties issuing the residuary participation which shall in all respects be subject to the conditions of the respective syndicates which may be formed for the purpose of effecting the issue.
- (4) Each of the parties issuing the residuary participation shall be entitled to decide for itself and without reference to the party or parties giving such notice or notices as to what expenses shall be incurred in relation to the issue of the total amount issued by such party.
- (5) The party or parties issuing the residuary participation shall be entitled between them to charge the party or parties giving such notice or notices with a commission of not exceeding $1\frac{1}{2}$ per cent. on the nominal amount of the residuary participation and also with a *pro rata* share of the total expenses which the issuing party or parties may in their sole discretion incur in relation to the whole issue and being in the proportion which the residuary participation bears to the total nominal amount of the issue.
- (6) The party or parties issuing the residuary participation shall not by virtue of this agreement incur any responsibility to subscribe for the residuary participation or to cause the same to be subscribed.
- (7) Each party issuing the residuary participation shall apply all subscriptions received by it *pro rata* between the residuary participation issued by it and the amount issued by such party on its own account.

(8) Each of the parties issuing the residuary participation will apply for and use its best endeavors to obtain a quotation on its market for the total amount issued by it.

(9) No issue of the residuary participation or any part thereof shall be made by the party or parties giving such notice or notices unless mutually agreed by the parties hereto.

7. No participation shall be given by any one of the parties hereto outside its own market. Any participation given in its own market by any one of the parties hereto shall be for its own market only or in the event of the issue including any of the residuary participation for the accounts *pro rata* of the issuing bank and the party or parties giving such participation, the party giving the same shall use its best endeavors to secure that no part of such participation shall be transferred to parties outside the market of the party giving the same. Any other participation shall be given only with the consent of all parties hereto and shall be borne in equal shares by the parties hereto.

8. This agreement shall remain in force for the period of five years from the date hereto provided nevertheless that a majority of the parties hereto may by twelve months' previous notice in writing addressed to the other parties hereto determine this agreement at any time.

In witness whereof the duly authorized representatives of the respective parties hereto have set their hands the day and year first above written.

For the HONGKONG AND SHANGHAI BANKING CORPORATION

On behalf of the British Group :

C. S. ADDIS.

For the BANQUE DE L'INDO-CHINE

On behalf of the French Group :

TH. DE LA CHAUME.

For the YOKOHAMA SPECIE BANK, LTD.

On behalf of the Japanese Group :

K. TAKEUCHI.

For and on behalf of the American Group :

J. P. MORGAN & Co.

KUHN, LOEB & Co.

THE NATIONAL CITY BANK OF NEW YORK

by J. A. STILLMAN, *President*.

THE GUARANTY TRUST CO. OF NEW YORK

by J. R. SWAN, *Vice-President*.

CONTINENTAL & COMMERCIAL TRUST & SAVINGS BANK, Chicago

by JOHN JAY ABBOTT, *Vice-President*.

CHASE NATIONAL BANK, New York City

by A. H. WIGGIN, *Chairman*.

LEE, HIGGINSON & Co.

America and Japan in Manchuria

Harriman's Plan to Force Japan to Sell the South Manchuria Railway

HEN the Peace of Portsmouth was signed, relations between Japan and America were most cordial. Japan had fought her great adversary, driven her back beyond the Sungari, and drenched the soil of Manchuria with the blood of her sons. Her reward, the fruits of her victory, consisted of a broken down, busted railway, with its short term lease inherited from Russia. True, she received the southern half of the frozen island of Saghalien, but the one tangible award was the South Manchuria Railway, while Russia retained control over her military line and base in the north, undamaged by the war. Japan had no funds even to convert her prize into a going concern. She was bankrupt, or almost so. She borrowed the funds in England and spent them in the United States to reconstruct the railway. She had to work quickly and be ever on the alert to fortify herself against the return of her formidable enemy.

This was the situation, in brief, when Mr. Harriman, the great railway manipulator, conceived his idea for a round-the-world transportation system, and initiated those fateful and secret negotiations which have since been made to serve as the lever to undermine Japan's position in Manchuria. We could write a book from our own experiences on the various ramifications surrounding the Manchurian controversy, but prefer to let the story be told by Mr. Willard Straight, who speaks to us out of the grave through the pages of the great magazine he created. In effect, Mr. Straight tells us that while he was still acting as consul-general, he was at the same time in correspondence with Mr. Harriman, elaborating a scheme which would nullify Japan's position in Manchuria through competing railway rights.

Mr. Straight tells us in no uncertain terms, that the Chinchow-Aigun railway contract (the counterpart of the Taonan-Jehol line) was to be employed as a lever to compel Japan to sell out her rights to the South Manchuria Railway to Mr. Harriman, or, if Japan was unwilling to make such an agreement, then the alternative line would place her in a "very embarrassing position in Man-

churia." It is well that the reader should form his own opinion from the facts. We republish in full the story of Mr. Straight, from the February 1921 number of "Asia." It needs no comment. The policy of the consortium, the whole attitude of America towards these questions must undergo a change. We are confident that the American people when they know the facts, will never go to war against a friendly power in order to further the grandiose schemes which originated in the mind of the greatest railway manipulator and stock exchange operator our country has ever produced.

* * *

AN AMERICAN IN ASIA

Willard Straight in Far Eastern Finance

By Louis Graves

The impression that he made upon E. H. Harriman, when the railroad financier visited Korea in 1905, was directly responsible for Willard Straight's entrance into the financial affairs of the Far East. Harriman's imagination had been seized by the vision of an around-the-world Harriman transportation system, with the Trans-Siberian Railway a part of it. It was Harriman of all American financiers who first saw the opportunity for great American development in the Far East and backed his belief with hard personal work and large plans.

"The working out of the Eastern question interests me and there is much we can do to get it started on more direct and straightforward lines than heretofore," Harriman wrote Straight just before his death after four years of correspondence and relationship with Straight in Far Eastern affairs. And in a letter to another he thus recorded the reason for his interest. "These financial groups are very uncertain and shift and change with the signs of storm or calm. The development work appeals to me more than anything else. After we have determined what we will do, then we can arrange the financing, and how it shall be done and who shall profit by it."

"I understand," wrote Straight in a memorandum, "that the suggestion that Mr. Harriman make the journey of 1905 to the Orient came from the Japanese government, with whom he had established close relations by virtue of the assistance rendered by him and by Mr. Schiff in co-operation with Sir Ernest Cassel of London, in floating the Japanese loan in New York and London. *By reason of the Russian defeat, he believed it might be possible to make some arrangement for the acquisition of the Russian Trans-Siberian line.* In July or early August, 1906, assisted by Mr. Lloyd Griscom, then American minister to Japan and Mr. H. W. Denison, an American attached as adviser to the Foreign Office, Mr. Harriman reached an understanding with Marquis Ito and Count Katsura, then the Japanese premier, under which Mr. Harriman was to furnish the capital for the reconstruction and operation of the South Manchuria Railway and for the development of various mining, timber and other enterprises along the line. These the Russians had extracted from the Chinese, and the Japanese in turn had taken from the Russians. The Japanese were to have a joint interest and political control in this undertaking. Mr. Harriman was assured there would be no hitch, but was advised that nothing definite could be done pending the result of Count Komura's negotiations with the Chinese government."

A year later Straight learned from Harriman that he had been informed through one of the leading Japanese financiers that the Chinese had not approved and the Japanese had determined to deal with the problem themselves.

"Mr. Harriman's project had not been definitely turned down, but it was obvious that no further progress could be expected," wrote Straight. "Prior to my departure for Mukden, in August 1906, Mr. Harriman asked me to keep him advised as to railway developments in Manchuria. He was still determined if possible to obtain a foothold in that region to carry out his scheme. Ultimately the Japanese government arranged to obtain in London the funds with which to finance the construction of their South Manchuria road. The Japanese, much to the disappointment of British interests, expended the funds which they had obtained in London in placing orders for railway material in the United States. In doing so, as I understand it, they were partly influenced by a desire to make up in some way for the failure to carry out their agreement with Mr. Harriman."

This decision by Japan to hold fast her claims in Manchuria marked the unfolding of her imperial plan in China. It also marked the beginning of a long and tedious, but obdurate fight, in which Straight played the leading active part—aimed to prevent Japan and Russia from closing in on Manchuria to the detriment of other national interests and Chinese sovereignty. The conclusion five years later of the contract between China and the six power group—the United States, England, France and Germany with Japan and Russia admitted as partners—for joint loans to China, was the first great result of the fight. The consortium of 1920 is the sequel.

The story of the fight begins in the summer of 1907, with Straight as consul-general at Mukden. The general aim was to establish an American economic foothold in Manchuria. The concrete aim was to build a railroad which, by paralleling the South Manchuria Railway (Japanese) and its northern extension to Harbin (Russian), should nullify the strategic control over Manchuria held by Russia and Japan through their possession of this railroad link between the Trans-Siberian line and an ice-free port on the Gulf of Chihli.

"At that time," Straight wrote, "Lord ffrench, representing Pauling and Company [British contractors], and J. O. P. Bland, representing the British and Chinese Corporation, came to Mukden and secured from the Chinese government the right to build an extension of the Chinese Imperial Railways [the line from Peking to Mukden] from Hsinmintun, north to the town of Fakumen, 47 miles distant, with the ultimate right to extend this road to Tsitsihar [about 400 miles north] on the Trans-Siberian Railway. [This would have given a railroad connection from the Trans-Siberian line across Manchuria to the sea, quite independent of the Russo-Japanese line.] I was familiar with these negotiations. They seemed to offer an opportunity for the realization of Mr. Harriman's

plans and for the creation of Anglo-American-Russian co-operation in Manchuria. This I believed to be essential, for I did not feel that the United States was sufficiently strong politically alone to undertake to counterbalance Japanese influence."

What the building of this British railroad as a parallel to the Japanese South Manchuria line might have meant politically may be judged from a significant statement recorded by Straight:

"After lunch, Goto's aide [Baron Goto, minister of communications] came in. He said Japan would, if necessary, with weapons, prevent the construction of the Hsinmintun-Fakumen Railway."

The Japanese protested to the British, their allies, and the British foreign office withdrew its support from the scheme, which fell by the wayside. But Straight adapted it later to the plan he was working out, as providing the means for joint American-British action in Manchuria under American leadership.

"I had several discussions with the Viceroy [Hsu Shih-chang, now president of China] and Governor [Tang-Shao-yi]," Straight wrote, "and as a result drew up an outline of agreement, which would give to American interests the contract for a loan of some \$20,000,000, carrying with it the right to establish a Manchurian bank to co-operate with the Manchurian government. This bank would be the financial agent of the Manchurian government in undertaking mining, timber and agricultural development and the construction of certain railways, among others the line from Tsitsihar running north to Aigun on the Amur River. This scheme I sent to Mr. Harriman in September, 1907. Early in October I received a cable stating that financial conditions in New York were such, brought on by the panic, that the transaction would be impossible."

This plan put up to Harriman for backing was Straight's first important contribution to the solution of the Far Eastern problem through American action. He was convinced of Harriman's intention to put through a big idea and he knew that the panic of 1907 meant only a temporary delay. In the field, he continued to work in close contact with Tang Shao-yi and to keep the state department and Mr. Harriman fully informed at home.

The relationship of these two men—Straight, a mere untried youngster of twenty-seven, out on the field, and Harriman, the greatest railroad-financial genius of his generation, at home, each working with independent mind and vision, with strong confidence in the other and with assurance of America's ability to attain a place of great influence on the Asiatic continent—was a dramatic one. The two stood out alone in the breadth of their vision and resourcefulness. All the time Straight in Manchuria, in touch with actual conditions, was working out plans and the diplomatic facilities for carrying them out, to be put up to Harriman. He was confident that, when the time was ripe, Harriman had the abiding interest and the nerve to put his power behind them. Harriman on the other hand relied with rare confidence on the observing power, vision and good judgment of Straight. So great was this confidence, that a year and a half later Harriman was making strong representation to the Taft administration that Straight, who considered himself much too young for the post, should be made minister to China.

In 1908, almost a year from the time Straight first put up his proposition to Mr. Harriman, he was suddenly summoned by cable through the request of Mr. Harriman to return to the United States to discuss the Manchurian financing plans. Harriman had seen that conditions were right financially for reviving the Far Eastern loan. On the night before leaving Mukden—rather, at six in the morning—Straight signed a memorandum of agreement for a \$20,000,000 loan along the lines of the discussions of the year before, including a Manchurian railroad. This was a rough preliminary, not the detailed agreement, which it required two more years to get.

"I carried the agreement for nearly six weeks in a small wallet tied about my neck in silk case," wrote Straight. "That memorandum was the groundwork upon which the American group is based."

He was made acting chief of the division of Far Eastern affairs in the state department soon after his arrival in Washington. He took up with Mr. Harriman immediately plans for completing the loan they had discussed.

"On the third of December, 1908, by Mr. Harriman's direction, I called upon Mr. Otto Kahn of Kuhn, Loeb & Company and took up with him the question of the loan to China," he wrote. "Prior to my departure from Mukden it was determined that China was to send Tang Shao-ji as special ambassador to thank the United States for the return of a portion of the Boxer indemnity, and that on his arrival in America he should complete the negotiations for the loan the preliminary agreement for which I brought home with me. In the meantime, early in November, both the Empress Dowager and the Emperor Kuang Hsu died suddenly. At the end of October, moreover, Baron Takahira, who was then Japanese ambassador to Washington, had suggested to President Roosevelt and Mr. Root that, in order to prevent any difficulty between Japan and the United States in the Pacific, there should be an interchange of notes regarding the preservation of the "open door" in China, stipulating that both the United States and Japan should mutually respect the other's interest in the Far East.

"It seemed obvious that Japan was endeavoring to forestall the arrival of Tang Shao-ji and the attempt which it was believed he would make to reach some understanding with the United States, by making it appear through the interchange of such notes that there was a virtual alliance between the United States and Japan. Mr. Root and President Roosevelt were induced to postpone the actual signature of these notes until Tang's arrival. He reached Washington on November 30, the notes were shown him at noon that day by Mr. Root and the notes themselves were signed at four o'clock in the afternoon.

"Tang was very much discouraged. On the death of the Emperor Kuang Hsu, his nephew was named as his successor and his brother, Prince Chun, appointed Regent. The Regent hated Yuan Shih-kai and every effort was made to remove him from office. *Yuan, however, was endeavoring to hold his position by claiming that, through Tang's negotiations in the United States, he would be able to secure American support, which would counterbalance Japanese domination in Manchuria.* The interchange of notes with Japan was promptly used by the Japanese, who were intriguing against Yuan, to prove that Yuan had failed in securing American support and that the United States instead of supporting China against Japan had in reality concluded a virtual alliance with the Japanese government. Yuan was driven from power early in January, 1909, and Tang himself left the United States for London shortly afterward. He felt that any further discussion of the loan was useless. The loan negotiations were dropped for the time being."

But they were dropped only from the Chinese end. The American negotiators were, if anything, more determined than ever to see things through. Mr. Harriman reverted to his original plan of 1905-1906 for the purchase of the Japanese and Russian lines in Manchuria. But during the subsequent conferences in the early part of 1909, a complementary and alternative scheme evolved. *This was to secure from the Chinese a definite contract for the building of another railroad in Manchuria, which could be used as a lever to influence the sale of the Japanese and Russian lines or, failing in this, could be built as an alternative line.* Straight tells of these developments as follows :

"While these events were taking place in Washington and China, Mr. Harriman had kept closely in touch with the situation and my discussions with Tang Shao-ji. In November, Mr. Schiff, who was in close touch with Mr. Gregory Wilenkin, formerly the Russian financial agent in the United States and then the Russian agent in Japan, had been advised that there was still some possibility that Russia would be willing to sell the Chinese-Eastern Railway, if Japan would agree to sell her Manchurian line. Mr. Schiff wrote to his friend, Baron Shibusawa, to ask whether the Japanese would be willing, in view of the previous memorandum of agreement with Mr. Harriman, to sell the South Manchuria Railway to American interests, provided the Russians would sell the Chinese Eastern.

"*This proposition the Japanese turned down. Early in December, I prepared a memorandum as to the basis upon which these two lines might be acquired.* The matter had been taken up with Tang Shao-ji, who had said that China would be glad and would co-

operate if we could organize an international syndicate to purchase both lines on behalf of China, thus anticipating the provision for repurchase of the lines contained in the original agreement of 1896 between China and Russia. This memorandum I believe formed the basis for the Knox neutralization proposals [for an international syndicate to buy out the Russian and Japanese railroad holdings in Manchuria]."

Here the situation becomes complicated by the introduction of discussion of another loan to enable American financial interests to take up participation in the building of the Hukuang Railways in South China. The state department had been fighting for the right of American finance to enter this loan with the British, French and Germans. There were therefore three ideas moving concurrently in the minds of the Americans. First and immediately came the effort to purchase the Russian railroad in Manchuria. Secondly, there was the necessity for immediate action to enable the United States to take its place in the Hukuang loan. *Thirdly, there was the fundamental plan in the minds of Harriman and Straight to obtain from the Chinese a Manchurian railway contract to make the American position secure, whether the Russians or the Japanese sold their railroad or not. This contract, later secured, was known as the Chinchou-Aigun plan.* The negotiation of the contract was to be the first essential in the American position. But no contract with the Chinese could be official without a ratifying edict. And therefore the edict for this contract, told of later in the story, became the key to the whole American position. It was in the development of this idea for the Chinchou-Aigun Railway that Straight contributed his first big share in the team-work with Harriman and the group of American financiers now interested.

"Early in May, Kuhn, Loeb & Company decided to send a representative to China to endeavor to complete the loan negotiations which had been undertaken the previous year," Straight wrote. "Subsequently it became obvious that unless American financial interests were willing at once to enter the field, the right to participate with the British, French and German interests in the construction of the Hukuang Railways would be lost to the United States. At this time I was working very closely with Mr. Robert Bacon of J. P. Morgan & Company. That firm was also thinking of sending a representative to Peking, and, in order to secure co-operation between the American financial interests, and to secure as strong representation as possible, it was agreed in June to form the so-called American group, consisting of J. P. Morgan & Company, Kuhn, Loeb & Company, the First National Bank and the National City Bank, and I was designated as their representative. The group was finally organized early in June.

"Mr. Harriman sailed for Europe at the end of May and I followed at the end of June. In early July we had a conference in London regarding the Hukuang Railways without reaching any satisfactory understanding. Shortly after, I went to Bad Gastein where Mr. Harriman was then taking the Cure. I stayed two days with him and talked over the Far Eastern situation very fully.

"No one I think, was familiar with Mr. Harriman's plans for his Manchurian railway and round-the-world transportation system. I doubt very much if Mr. Kahn knew the details and I am quite sure that none of the other interests of the American group, in which Mr. Harriman also had a participation, were at all familiar with his ideas. While in Paris Mr. Harriman had arranged with Mr. X — to go to Petersburg to discuss with the Minister of Finance the possible purchase of the Chinese Eastern Railway [the northern Manchuria line]. I was to endeavor to secure from the Chinese government the right to build a line from the Gulf of Chihli to run north to the Trans-Siberian Railway, possibly up to the Amur.

"Once an agreement had been reached with the Russians and the right for the construction of a north and south line secured from China, we would have been in position to negotiate with the Japanese. If they had been willing to make some arrangement regarding joint operation of the South Manchuria Railway, it would have been unnecessary to construct another north and south line. If they were unwilling to make such an agreement, the construction of another north and south

line operating in conjunction with the Russian road would have placed them in a very embarrassing position in Manchuria.

"I reached Peking early in September and on October 2, with Pauling and Company, signed with the Viceroy of Manchuria an agreement for the construction of a line from Chinchou on the Gulf, to Aigun on the Amur, making the first step in Mr. Harriman's scheme. This line was to be financed in America, and to be constructed by Pauling and Company, who had the original concession from the Chinese government for the line from Hsinmintun to Fakumen. We hoped thus to have the advantage of securing Anglo-American co-operation.

"I had received word of Mr. Harriman's death on September 10. Returning to Peking from Mukden, I found a letter from Mr. Harriman, written on the way from Paris to Cherbourg, in which he told me that X—had come back from Petersburg, where he had arranged with Kokovtseff, the minister of finance, that on his return to Russia from a trip which he was about to make to Vladivostok, he (Kokovtseff) would recommend the sale to American interests of the Chinese Eastern Railway. Mr. Kokovtseff in accordance with his promise did on his return make this recommendation.

"The arrangement had been made with Russia, the contract secured from the Chinese government, but the directing genius had gone. I cabled to New York, urging the group to get in touch with Mr. Harriman's secretary and familiarize themselves with his plans. I had previously urged that a representative be sent to Petersburg in order to negotiate with the Russians but this recommendation had been turned down. No one in New York knew precisely what Mr. Harriman had in mind; no one was capable of carrying through his scheme. The group, I understand, advised the state department of the arrangement which Mr. X—had made. Shortly after, they cabled me, asking whether the imperial edict had been issued, ratifying my preliminary agreement with the Viceroy of Manchuria.

"I replied that from reliable sources I understood that the edict had been issued. [As a matter of fact, it had not, though a secret and vague conditional edict had.] Without cabling the legation, which at that time was in charge of Fletcher [recently ambassador to Mexico], without waiting for confirmation from me, the state department, on the basis of the report above mentioned, launched the neutralization proposals [the invitation sent to the Russian, Japanese, Chinese, British, French and German governments to join in an international arrangement to buy out the Russian and Japanese railroad possessions in Manchuria with an alternative proposition to join with the United States in building the Chinchou-Aigun Railway, the potential rival of the Russian-Japanese line].

"The scene had been set, but to carry through the plan it would have been necessary to conduct unofficial conversations with both Tokyo and Petersburg, to secure the approval of London and Paris and possibly of Berlin, and then, when all arrangements had been made, to make an official proposal. *It would have been wiser, probably, in any case, to have left these negotiations in the hands of private individuals. The scheme was all right but it required delicate handling instead of blacksmith methods.* In Russia, M. Izwolsky, the minister of foreign affairs, was a bitter enemy of Kokovtseff. Also he was anti-American. Izwolsky desired a closer understanding with Japan and Kokovtseff wished to work with American capital. By handling these neutralization proposals through diplomatic channels, the negotiations were placed in the hands of Izwolsky and not of Kokovtseff. Izwolsky used the whole scheme and the bogey of an American incited anti-Russian China, which he built upon it, and the manner in which it had been presented, to convince his colleagues in the government that the only protection against American intrigue was a rapprochement with Japan. He was successful. The proposals resulted in a rebuff to the United States, the nullification of all work which had been done by Mr. Harriman [in endeavoring to buy or internationalize the Russian and Japanese lines in Manchuria] and the signature of the Russo-Japanese agreement of July 4, 1910

[for mutual co-operation and protection of interests in this territory], which practically lost Manchuria and Mongolia to China."

Whatever declaration Russia and Japan had made in treaties and conventions, what these two did *not* want was the "open door" in Manchuria and they quickly came together to defeat it.

The Knox neutralization proposals came out early in 1910 and immediately threw the Russians and Japanese into each other's arms. But though the Knox proposals forced the Russians and Japanese to refuse definitely to sell their railroad lines in Manchuria and furthermore aroused their intense opposition to the building of the Chinchou-Aigun Railway, Straight and Fletcher kept fighting for it with confident hope of success. And success they achieved in the final contract signed by the Chinese a few months later.

"Fletcher managed to extract the Chin-Ai edict from the Chinese," wrote Straight, "on practically the same day that the Knox proposals were published, and Washington's face for the moment was saved—a little bit." But the final agreement for the loan still had to be drawn.

"Our whole play is to work China's fear of Russia and Japan to get our detailed agreement through," Straight wrote later, "then to take Japan and Russia out of the way. Had we done this first and then tried to put through out detailed agreement, the Chinese would have laughed at us.

"The Russians have put their foot down and the Chinese are in a blue funk. They will not move until forced into action by our government. Whether Washington can do more than it has done already to help this ungrateful, vacillating, weak-kneed lot of officials, I don't know. It could if they'd do even a little to help 'emselves."

"Fletcher and I threatened Korostovetz [Russian minister] the other day," wrote Straight on April 17, "that if he didn't get his government to allow our railway to go through without further protest, we'd jolly well have Pauling & Company and the group open an office in Teheran and Constantinople and make a little trouble there. He was quite inclined to take us seriously.

"I saw that the Chinese were dilly-dallying and would continue to do so indefinitely if they were let. I saw that, once we had them under agreement, we could go no farther until we had either squared or defied Petersburg. The last course we could only risk as a last resort. Furthermore, our only club to bring the Chinese to terms was a threat to leave them to the mercies of Japan and Russia. So when things were pretty well settled, I announced that I would leave for Russia and New York. If they closed before I went, I should negotiate on their behalf with the Russians; if not, I should return to New York and report that they were not seriously anxious to build a railway, but were only using us for political purposes." Straight wrote this on April 21.

"Before I left China in April," he wrote later, "we had completed our negotiation of the final agreement for the Chin-Ai line. The Russians and Japanese had entered protests at Peking. But we hoped to be able to reach some understanding with the Russians. To this end I went to Petersburg in June, 1910, and met the ministers interested. I came away convinced that if we started to build our line and told the Russians we would only go as far as Taonanfu for the time being, we would eventually be able to complete the work. This proposition, however, was turned down.

"The Chinese wished to know what the American government was going to do about it all. The Russians, however, had clearly stated that, though they couldn't stop our building the line and had no treaty rights on which to base their protest, they would jolly well take it out of China if she tried to cross their Trans-Siberian road at Tsitsihar, and approach the Siberian frontier. We ourselves couldn't fight. The Chinese would have gone ahead if we had promised to back them up, but this we could not do, and, had we pushed the matter, we should probably have gone off scot-free and seen China lose a slice of territory or two. Our government, therefore, say down in front of the stone wall to the construction of which it had so largely contributed."

This conclusion of Straight's was set down long after the event but during this spring of 1910 hope of success for the Chin-Ai plan ran high. This hope was strongly encouraged by the belief that England, through its alliance with Japan and the influence it could surely exert, if it would, at St. Petersburg, would stand for the "open door," particularly as British interests were directly involved. But instead, England herself yielded.

"It's not the "open door" but the Door Mat policy—and China pays," wrote Straight. "An intimation from Sir Edward Grey to Japan that interference with this project would be regarded as a serious breach of Japan's treaty obligations, and a hint that the London market might tighten against Japan as a result, would have chastened her at once. Had Downing Street firmly but politely told Russia that, if she continued to oppose China's legitimate development in Manchuria, it would be necessary for Great Britain to reconsider her position all along the line, Russia would have been careful. British weakness has been the signal for Russian and Japanese bullying."

The Chinchou-Aigun project was therefore practically dropped. But for Straight it only meant but one battle in the fight and he turned to other projects—the currency loan and the Hukuang loan—to attain the same end.

Straight had come to Peking a thrill at the prospect of setting in motion a vast development. The Manchurian loan and the Hukuang loan were matters immediately at hand. But he saw them as the beginning of a new era for China—the symbol and the promise of still greater things to be. Not bankers' profits but the

sweep and bigness of the whole scheme—its meaning to the future of his country and to millions of men in Asia—stirred his imagination. Hence the atmosphere of distrust in which he found he had to work fell, at times, like a pall over his spirit.

"What bitterness there is in this China game!" he wrote in one of his letters home. "It is sickening sometimes. It is almost impossible for you to realize the pettiness and suspicion that prevail here, where every one more or less is spying on every one else. It is the storm centre of world politics, and the foreign community is very small. We see each other nearly every day—there are but few outside influences and diversions—and this brings out the little meannesses of human nature.

"Because one man does not invite another to dinner, because A's wife doesn't call on B's, B curses A and blocks his business. A invites B to dinner and pumps him dry; and if B be weak or vain, the chances are that A will learn things B has no right to divulge. You are up against the game all the time; each party to it finds little respite; for even our distraction must be shared by the same fighting crowd, who carry the scrap with them to the dinner-table and the polo-field."

Though Manchurian development plans were the underlying feature of Straight's work in this winter of 1909-1910, the matter of American participation in the three power loan for the Hukuang Railways was of concurrent interest. But now a new undertaking supplanted both Hukuang and Chinchou-Aigun in the centre of the stage. This was the currency loan, for the reorganization of China's monetary system, a structure tottering insecurely upon a silver foundation.

Japan's Dependence on Foreign Raw Materials

THE Portuguese minister-consul at Kobé makes the following report on the resources of Japan in reply to questions sent to him by the ministry for foreign affairs. Japan is entirely dependent on British India, the United States and Great Britain. For cotton India is indispensable, but Japan also imports some from the United States and China. Sheet iron and steel, and rails, she also receives from England and America, and to the latter she has to turn for mineral oil and leather. Australia supplies most of her wool. For the above commodities she will always be dependent on the foreigner.

Iron, one of the products most essential to her, she only obtains from three mines. Her oilfields are more important, but do not suffice for her needs. At the end of 1918 these numbered eight, and their yield was as follows:

	Koku.
Kurokawa (Nippon Company), Akita	625,497
Toyokawa (Oil and Asphalt Company)	121,193
Nittsu (Hoden Company), Niigata	502,775
Asahi (Chuo Company), Niigata	109,189
Kanatsu (Nakano Company), Niigata	124,743
Higashiyama (Hoden Company), Niigata	184,941
Nishiyama (Nippon Company), Niigata	320,999
Nishiyama (Nippon Company), Niigata	231,025

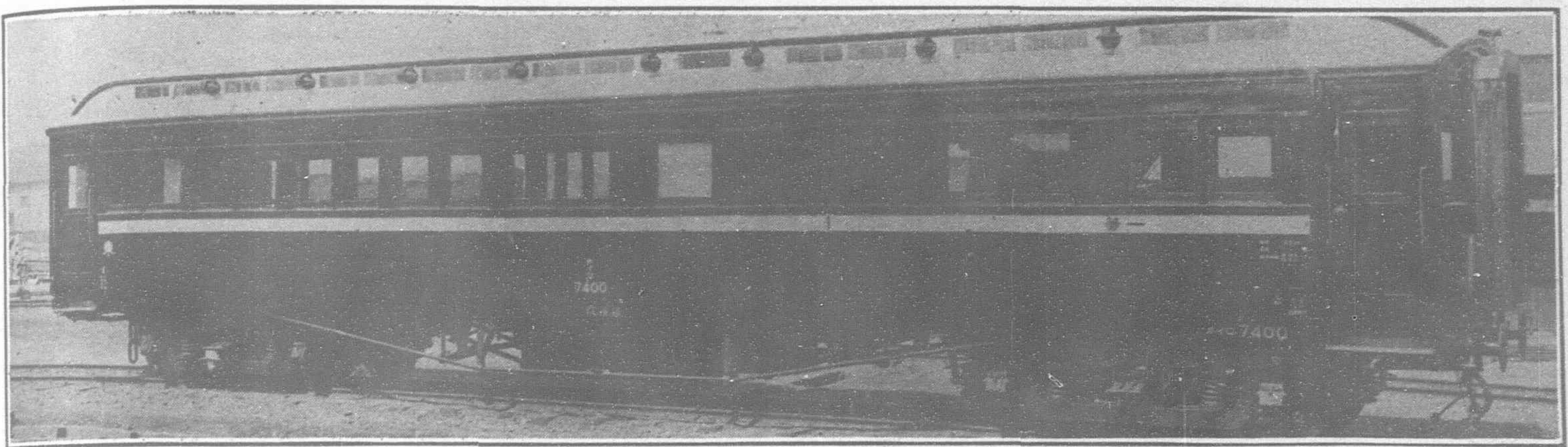
Cotton is not much cultivated in Japan, and never can be, owing to the climate, and also because every part of the empire available for cultivation is required for rice. Neither has Japan any wool owing to an absolute lack of pasturage. Attempts have been made to grow it, and sheep have been imported from Australia, but without success. The hills are covered with bamboo, which kills all other vegetation and produces sickness among the live stock. The import of wool cannot, therefore, be reduced. The above commodities are absolutely essential to the existence of Japan, not only for re-export in the form of manufactures, but also for home use.—*The Financier*, London.

Chinese Coal

OUR discontented miners would do well to read, mark, learn and inwardly digest the fact that France has just bought 100,000 tons of coal from the Chinese government, says the London Post. This "deal" synchronizes with the advice given by all the South African shipping lines to burn coal from the Transvaal mines, and is an indication of the trend of things incident to the exorbitant demands of labor. China's coal supply is practically inexhaustible, and is virtually untouched. She has enough good coal to supply the whole human race at its present consumption of a billion tons a year for a thousand years. The coal-bearing areas of China have been estimated at more than 200,000 square miles—a territory twenty-five times the size of Wales, and it is a remarkable fact that, instead of being limited to a few favored districts, this vast supply of coal is found all over the empire and in every province.

Found in an iron pot in 1917, a note of the Mitsui Bank, drawn in 1880, for Y. 160,000 and purchased by Yasutati Murakami, a medicine manufacturer of Dojima, Osako, has been held good by the Yokohama District Court. The bank has been directed to pay Mr. Murakami the face value with accrued interest.

Sixty million firecrackers will be manufactured by a Seattle company in China to help young America celebrate the 1921 Independence Day. W. E. Priestly, secretary of the Hitt Fireworks Company, made this announcement in Seattle on his return from Hongkong, where he installed a new factory in an old hospital building just purchased by the company from the British authorities there. The output for the next July 4 celebration will be sixty million small and large firecrackers to be shipped to Seattle and New York, while advance orders have already been received for twice that number of fireworks for the 1922 season.



FIRST AND SECOND CLASS PASSENGER CAR

Capacity: First Class, 18 seats; Second Class, 30 seats

Total Length, buffer to buffer, 55 feet 6 inches; Tare, 24.86 tons.

Progress in Designs of Japanese Rolling Stock

Some Striking Effects of Nationalization

THE standardization of parts of coaching stock on the Japanese government railways was not completed until 1910-11, or roughly three years after the nationalization. In the years 1907-8, and 1908-9, new construction was made from the existing designs owing to

the necessity of making use of materials transferred from the purchased railways, but after 1910-11 the policy of superseding them by bogies was generally pursued.

The 4-wheel bogie measures 55½-ft., and the 6-wheel bogie 66-ft., in length, compared with the 26-ft. of the ordinary 4-wheel vehicle. A corresponding gain has been effected in the width and height of the new bogie carriages which are now of practically the same dimensions as those in use on British railways, though inferior to those of America and the Continent. The proportions of the width and height of the car to the gauge are far higher than those obtaining on the existing standard gauge railways.

The 6-wheel bogie is practically of the same shape and equipment as the 4-wheel bogie; it is different only in the length of the car body.

Lighting

Prior to the nationalization, the carriages were generally lighted by means of oil-

lamps, except on the main line express and through trains, which were lighted by electricity. But after the nationalization this plan was superseded by a system of lighting by electricity on every express or through train, and by the Pintsch compressed-gas system on the accommodation trains, the use of oil-lamps being confined to a few trains of local service.

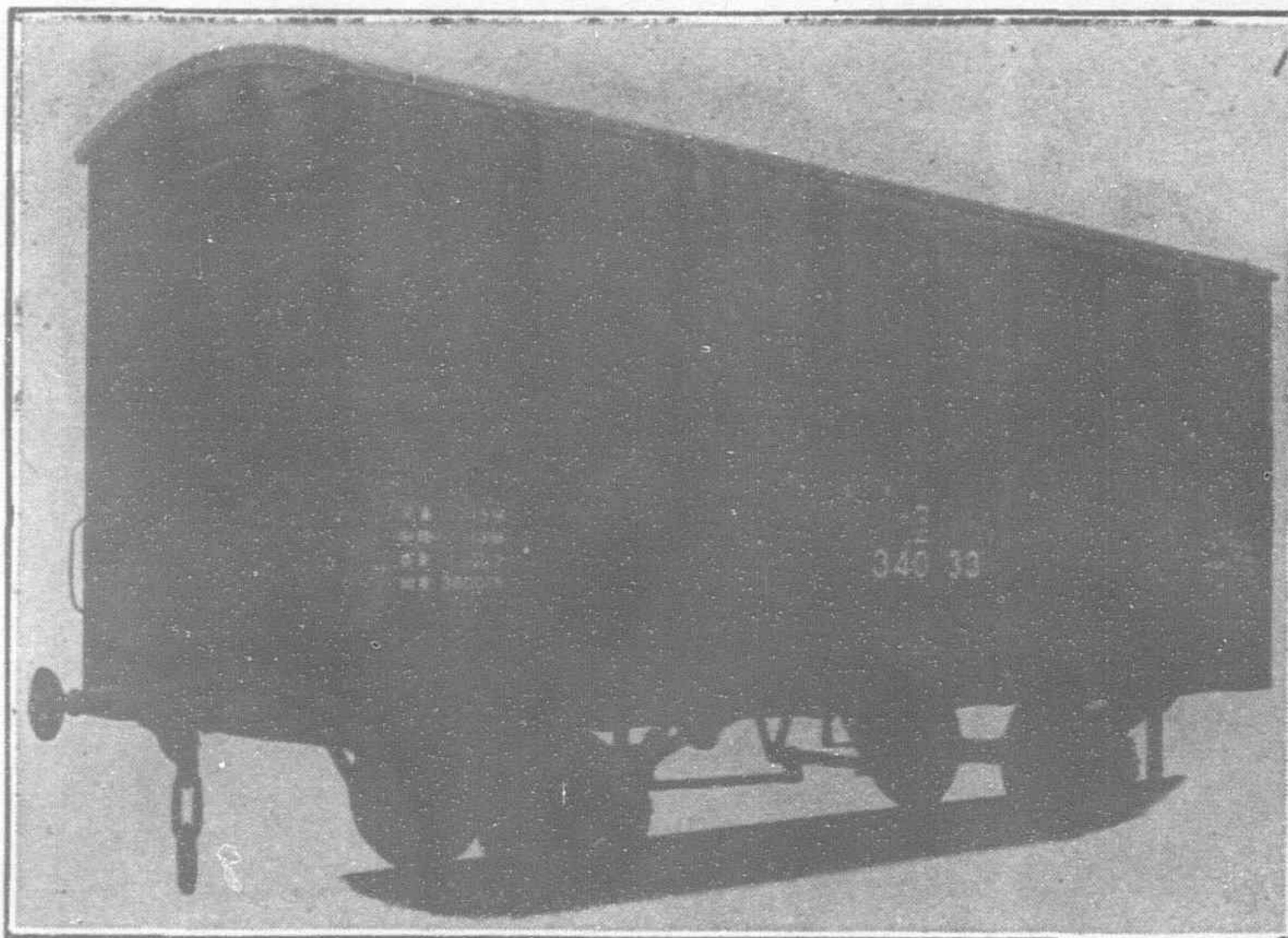
At the time of the nationalization, two electric systems were in use, one that of generating current by a dynamo driven by a belt from the car-axle and the other that of using an accumulator, but in 1914-15 and 1915-16, the method of lighting was unified on the "axle-dynamo" system. Trial use is being made of Vickers' dynamos.

Heating

The use of steam-heating apparatus was extended after the nationalization, to all passenger trains, but on some mixed trains where the supply

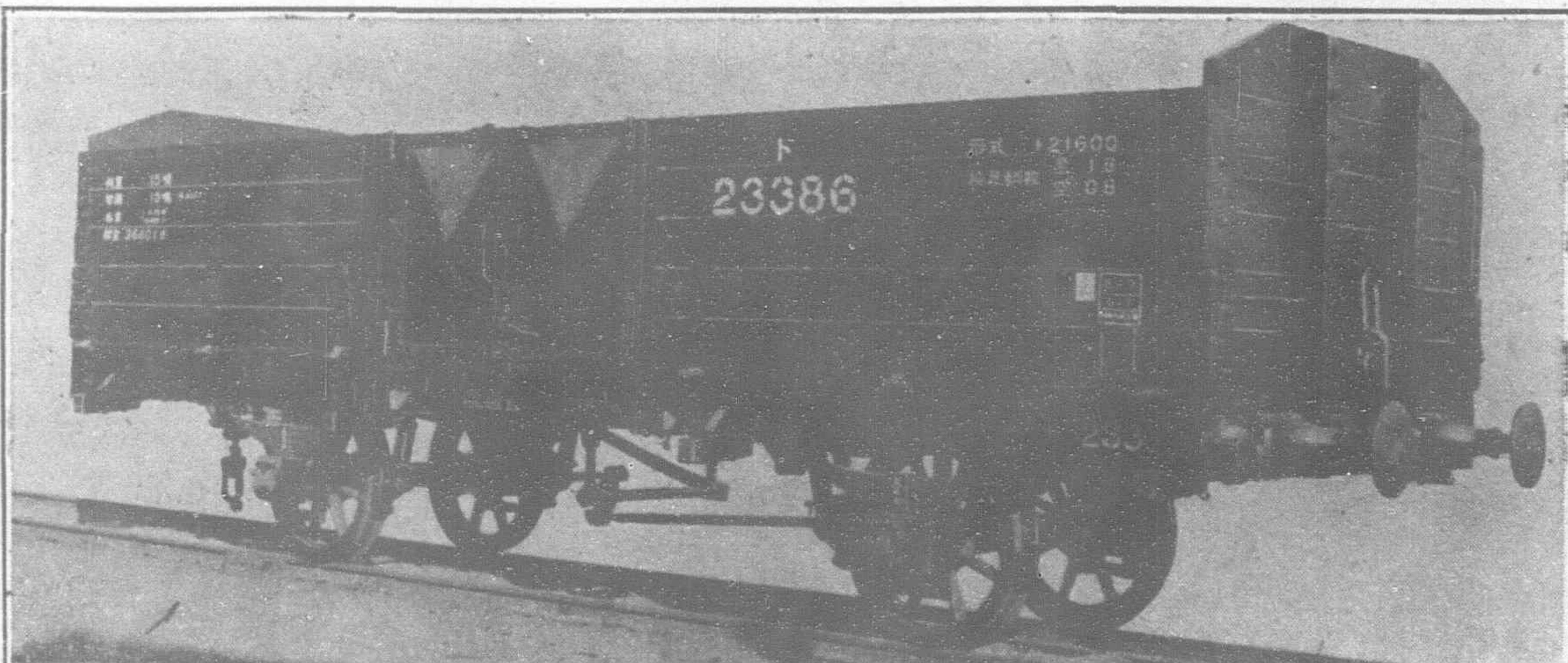
of steam is not practicable, stoves are provided. Except in carriages of special contrivance, each carriage is supplied with an iron pipe radiator, connected by a small pipe branching from the main pipes that are laid under the floors of the car bodies.

In the earlier stage of the



FREIGHT CAR (Covered)

Loading Capacity: 15 tons; Tare, 7.45 tons; Total Length, buffer to buffer, 26 feet 1½ inches.

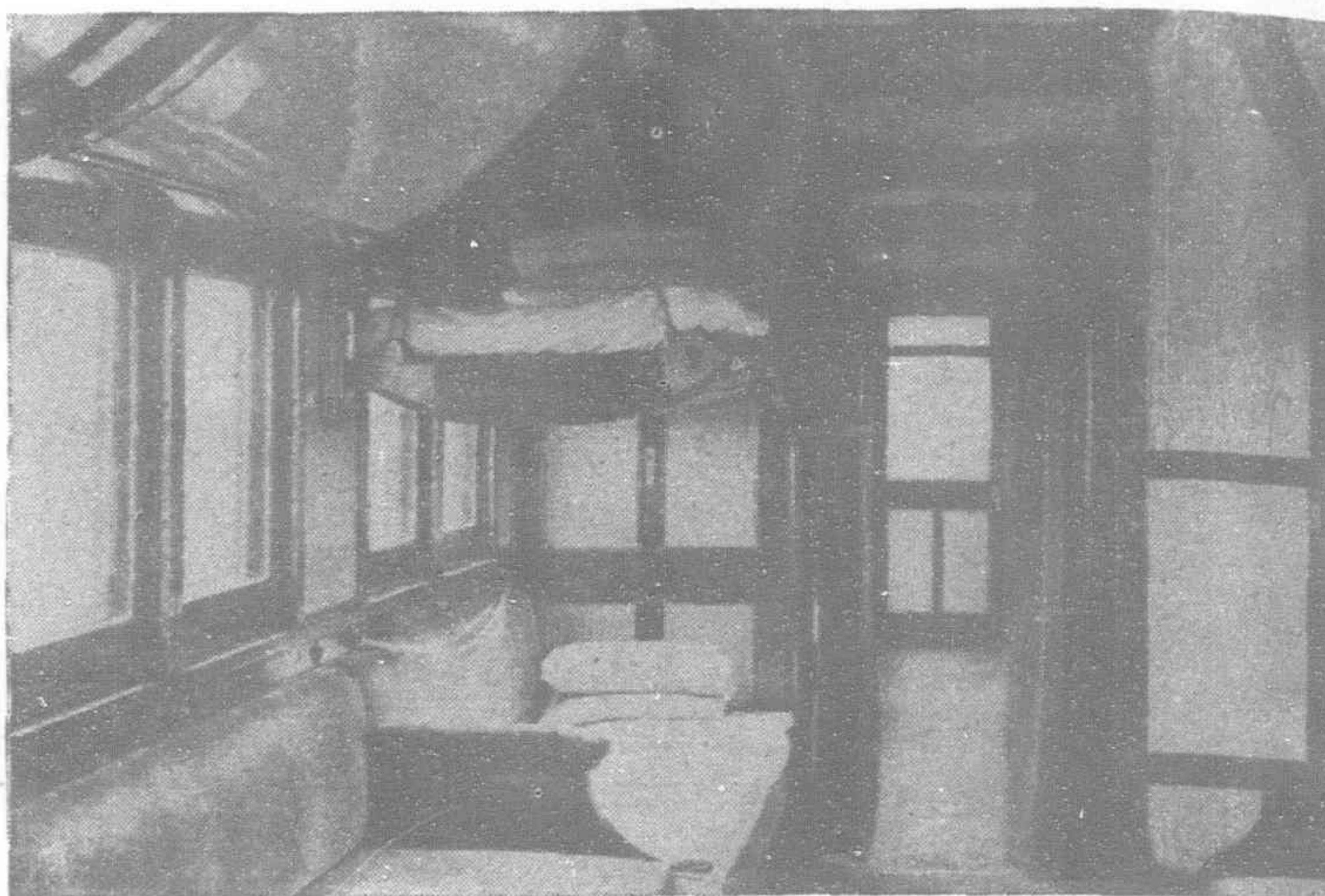


FREIGHT CAR (Open)

Loading Capacity: 15 tons; Tare, 6.73 tons; Total Length, buffer to buffer, 26 feet 1½ inches.



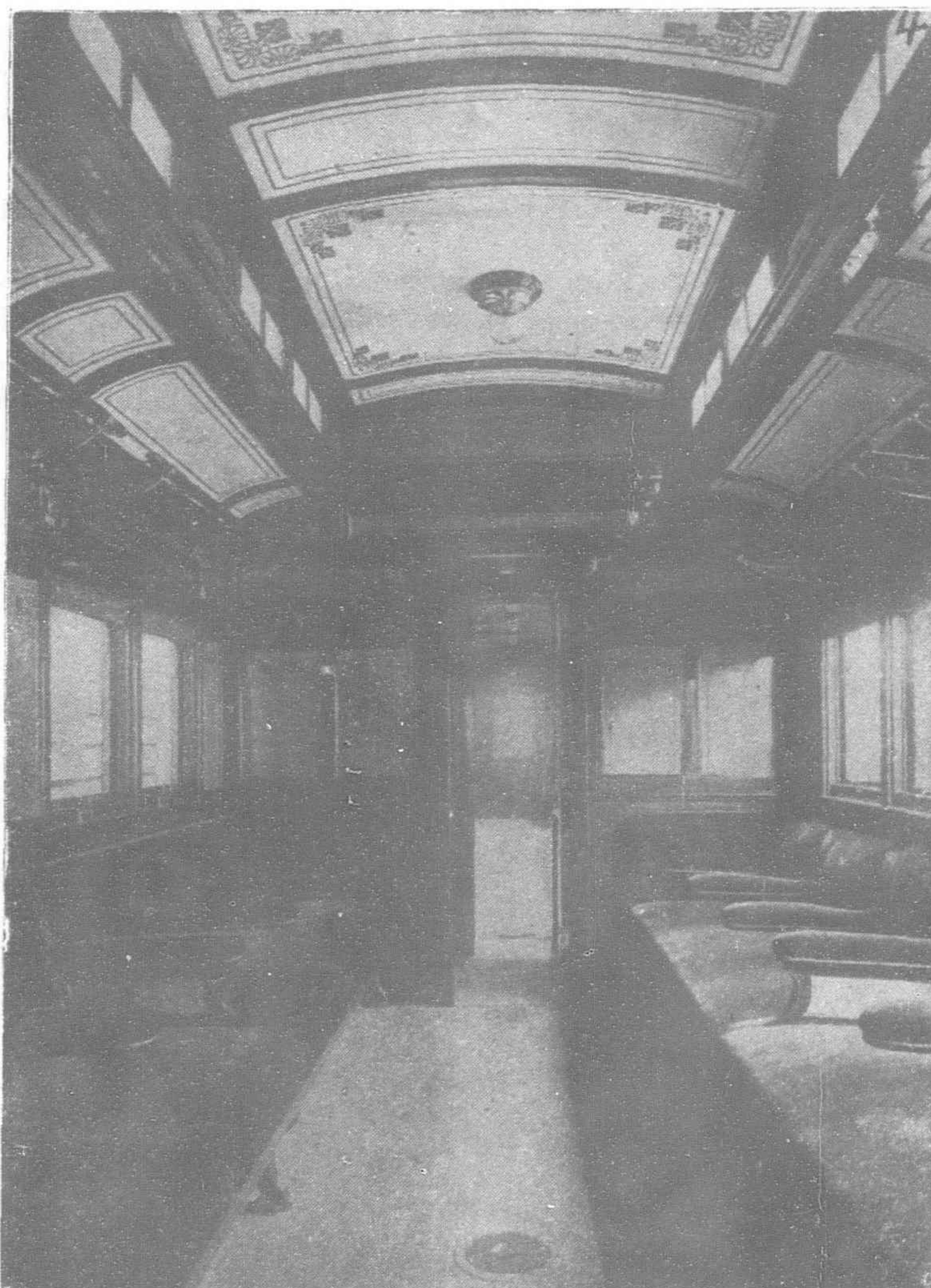
Dining Car, Interior View



Second Class Sleeping Car, Interior View

national régime, a 7-ton wagon with a capacity of 758 cub. ft. was the standard type, but in 1911-12 the width of the body was increased by 5 inches, the capacity being thereby enlarged to 801 cubic ft. and 9 tons. The vehicles built according to this type down to 1913-14 numbered 2,490. The underframes have recently been entirely rebuilt of steel. In view of the demand for wagons of greater loading capacity, the 10-ton standard axle was adopted for covered wagons with hand brakes built in 1913-14, the underframes of which were enlarged up to 23-ft. The wheel-base was also lengthened from 10-ft. to 13-ft.

In 1914-15, by an addition to the height, the capacity was further increased to 1,282 cubic ft., and in 1915-16, to 1,368 cubic ft. or 15 tons, by a substantial enlargement of the width. With a considerable gain in the section and an increase of about 35 per cent. in length, the dead weight increased only 50 per cent. as compared with 5 tons of the 7-ton cars, while the capacity was practically doubled. This 15-ton vehicle has been made



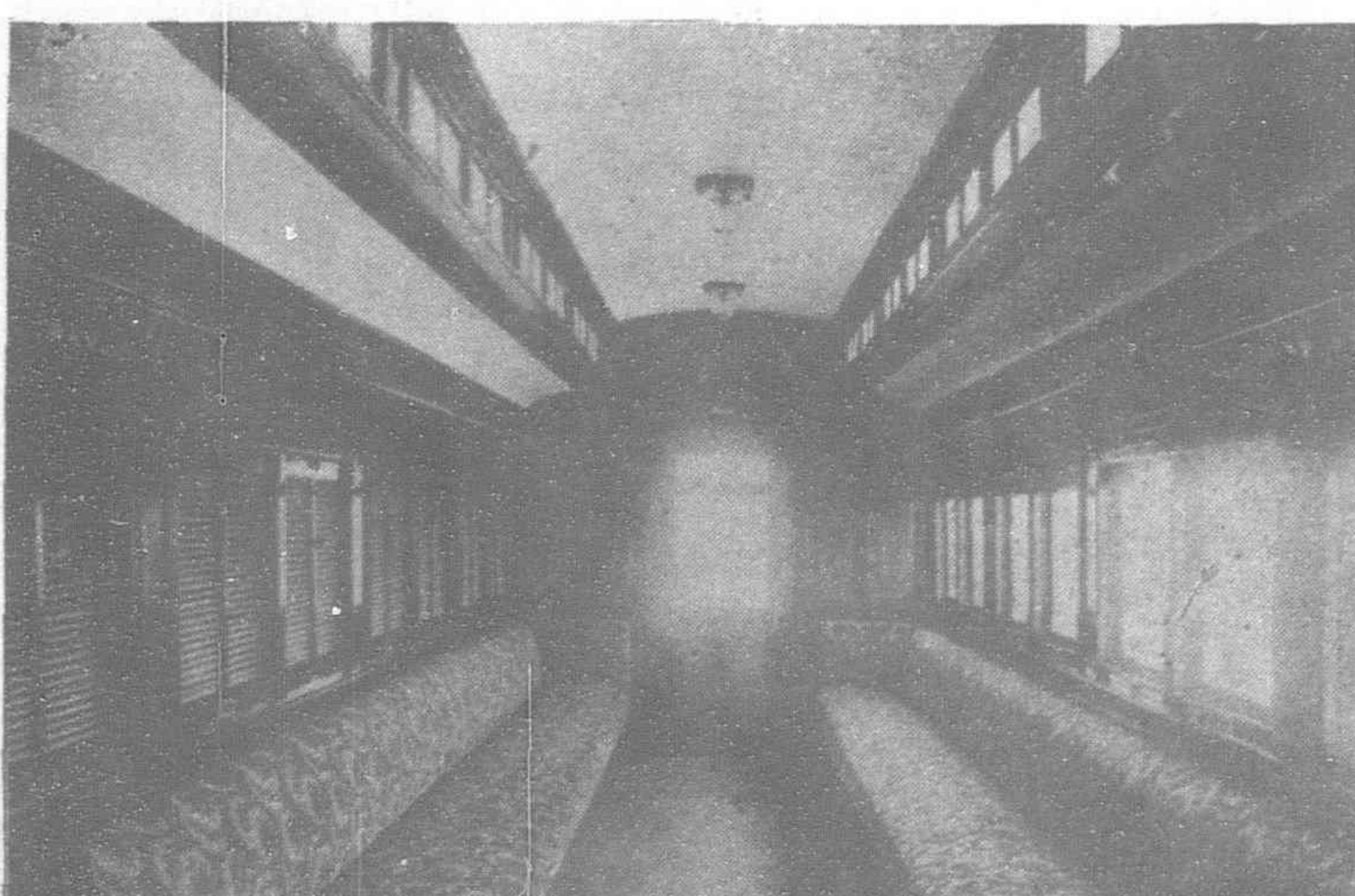
First and Second Class Passenger Car, Interior First Class Room

the standard type for new construction.

750 open trucks built in 1910-11 were practically of the same design as before the nationalization. They had a 5-ft. falling door on each side, the underframes being made of steel and wood combined which have since been rebuilt of steel. Frames of the same design as the 15-ton wagon were adopted for the new construction in 1914-15, which, compared with the standard type at the time of the nationalization, gains but slightly in width, but shows an increase of about 16-in. in height and 5-ft. in length. With an increase of only 40 per cent. in the dead weight, it has doubled the loading capacity of the older type. The design has been adopted as the standard type for later construction.

Coupling

After the nationalization, measures were taken for standardizing the "screw and link" coupling which was uniformly in use except in Hokkaido. Though the type was universal, the couplers themselves were

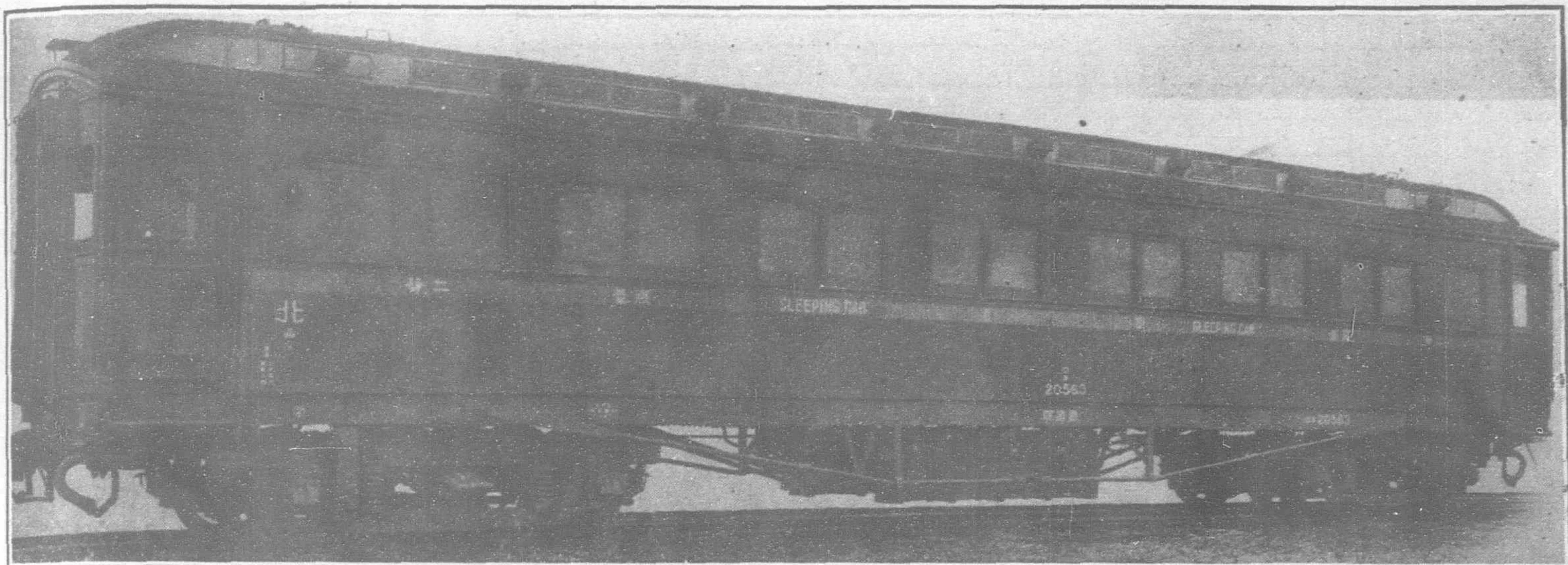


First and Second Class Passenger Car, Interior Second Class Room

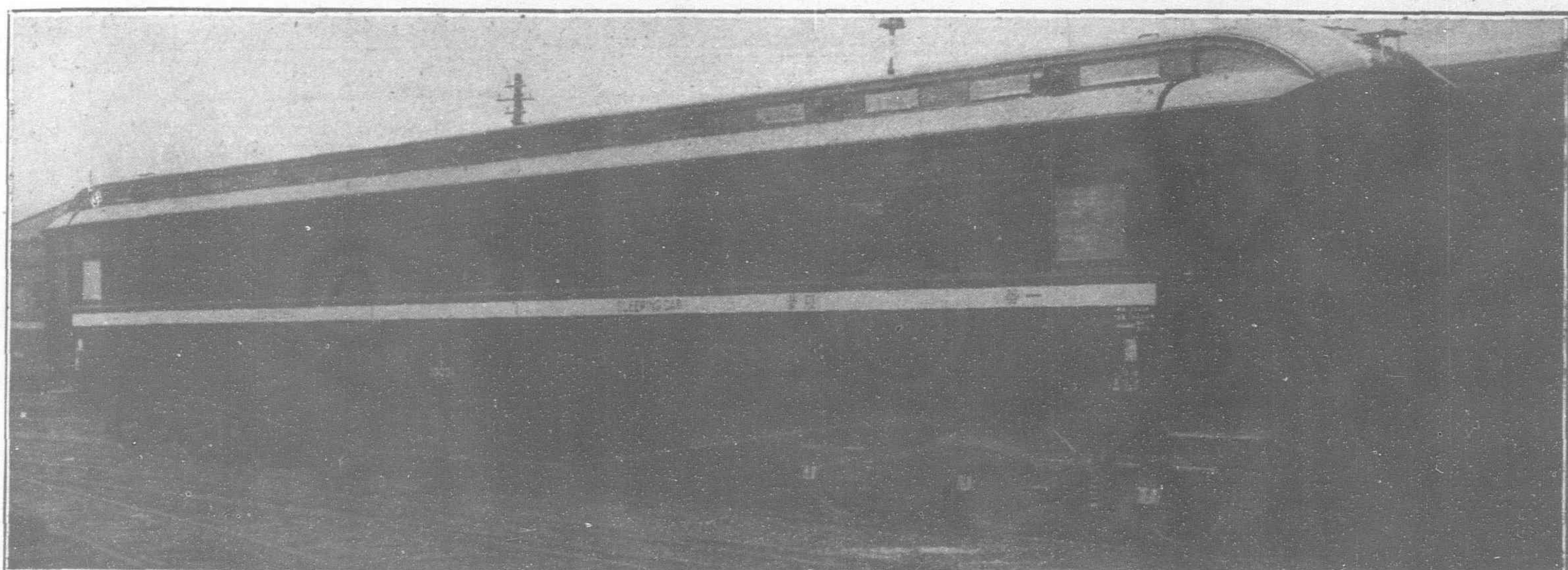


Third Class Passenger Car, Interior View

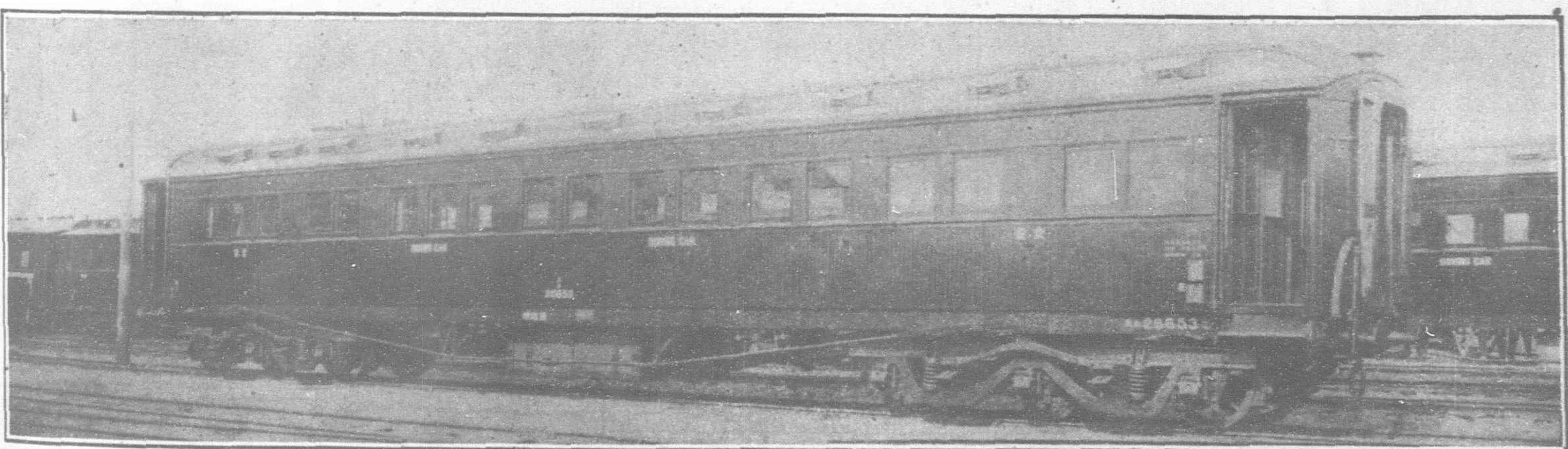
TYPES OF JAPANESE PASSENGER CARS



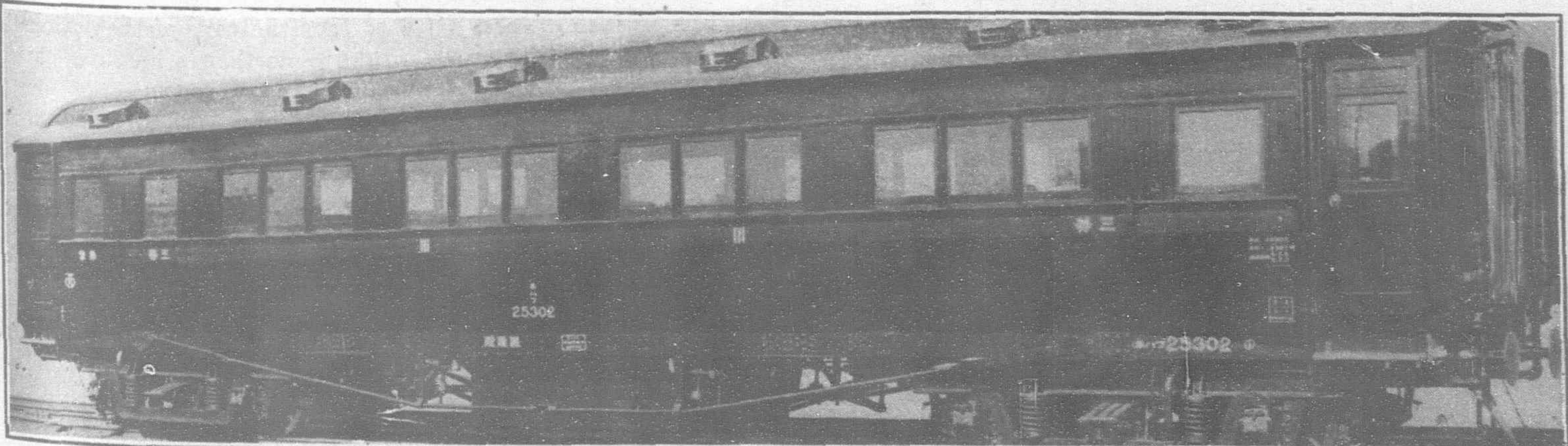
Second Class Sleeping Car. Capacity: 24 Berths and 36 Seats; Total Length, buffer to buffer, 56-ft. 2-in.; Tare, 29.0 tons



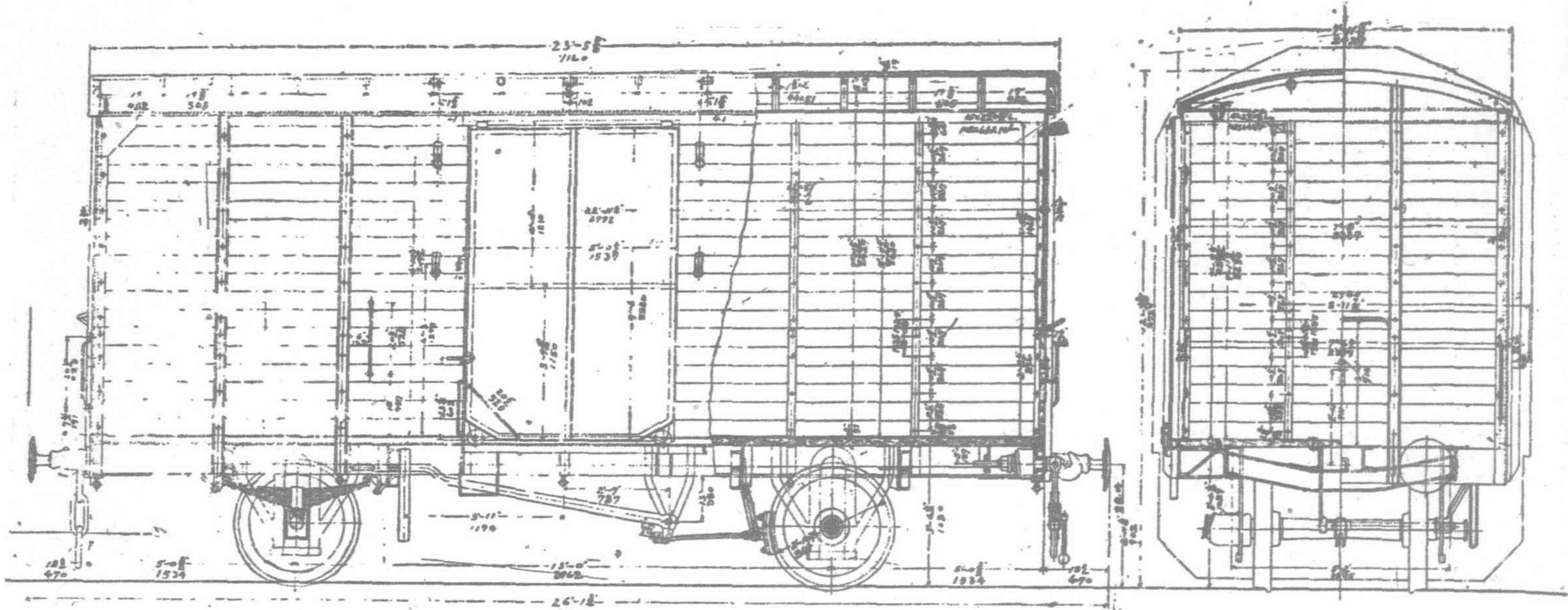
First Class Sleeping Car. Capacity: 22 Berths and 33 Seats; Total Length, buffer to buffer, 66-ft. 0-in.; Tare, 34.84 tons



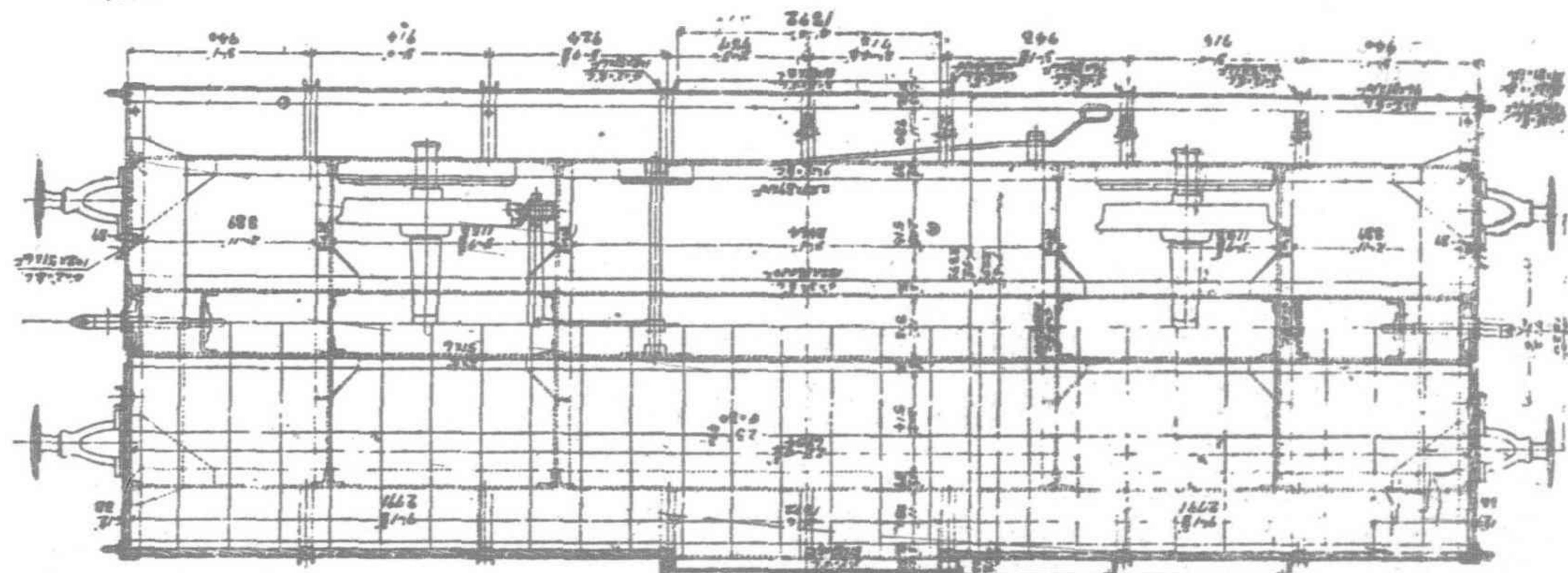
Dining Car. Total Length, buffer to buffer, 66-ft. 0-in; Weight, 32.68 tons



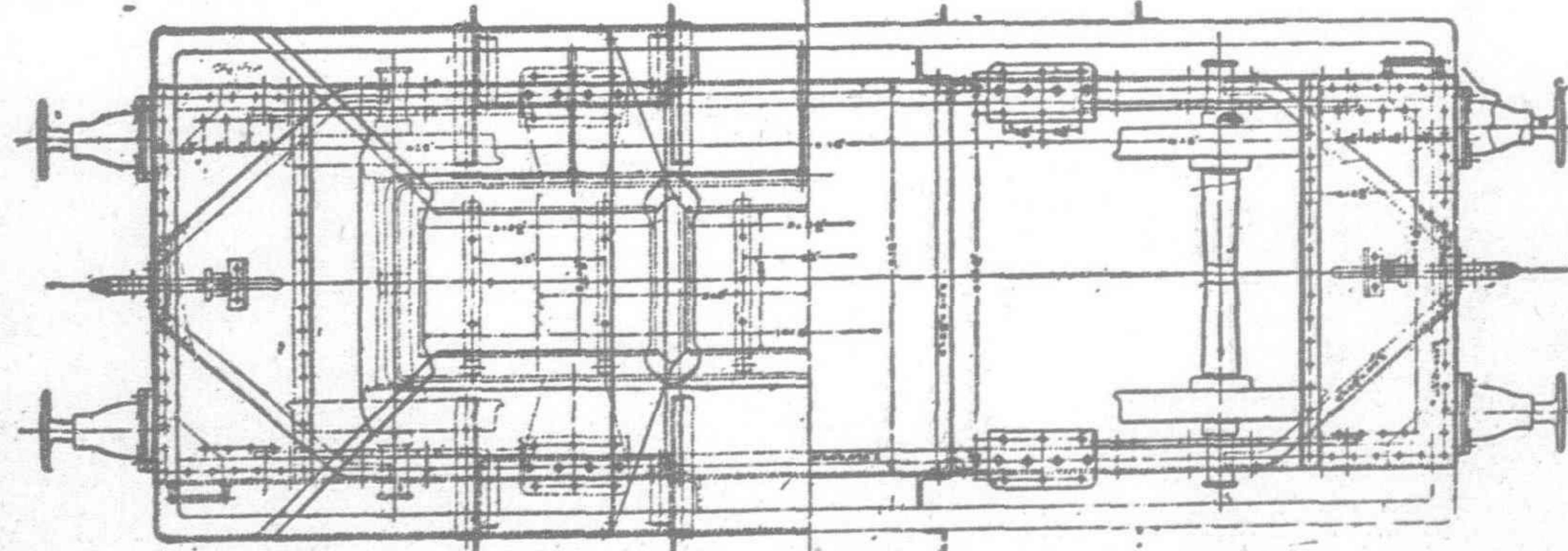
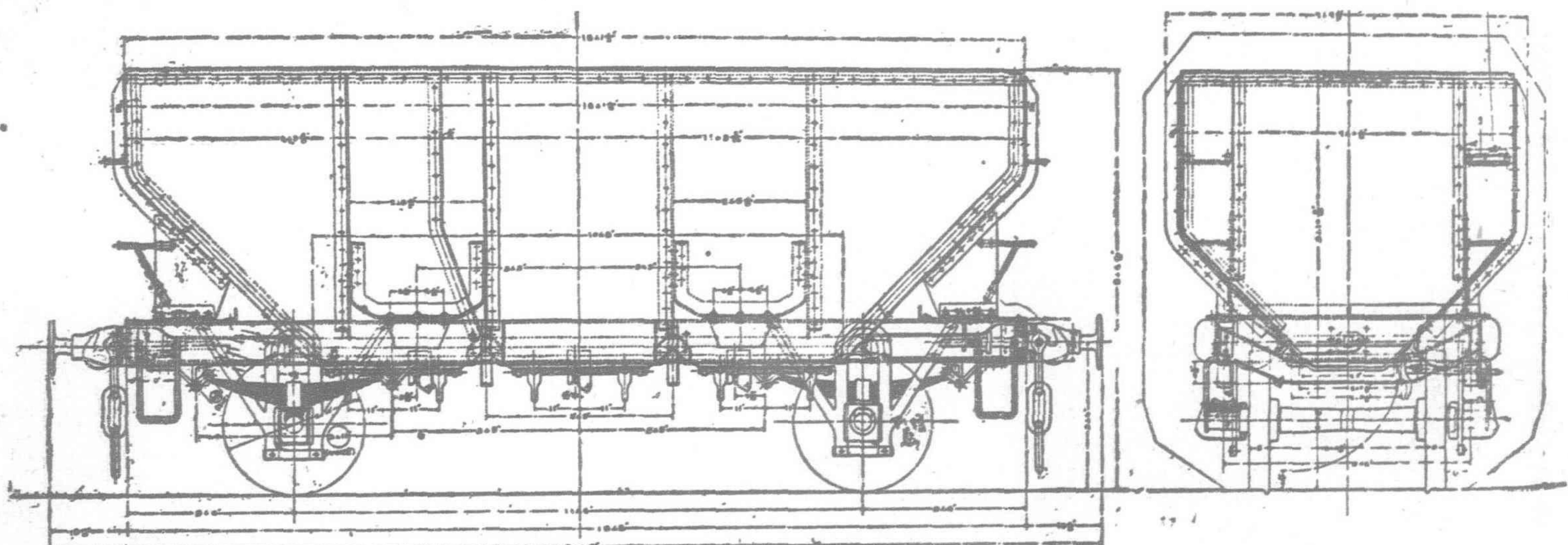
Third Class Passenger Car. Capacity: 72 Seats; Total Length, buffer to buffer, 55-ft. 6-in.; Tare, 25.67 tons



of divers dimensions, involving no small inconvenience in the process of coupling and uncoupling. In 1915-16 standard types were laid down for the coupling buffer and draw-bar. In the Island of Hokkaido, the pin and link couplings in use before the nationalization were standardized into the automatic buffer coupling.



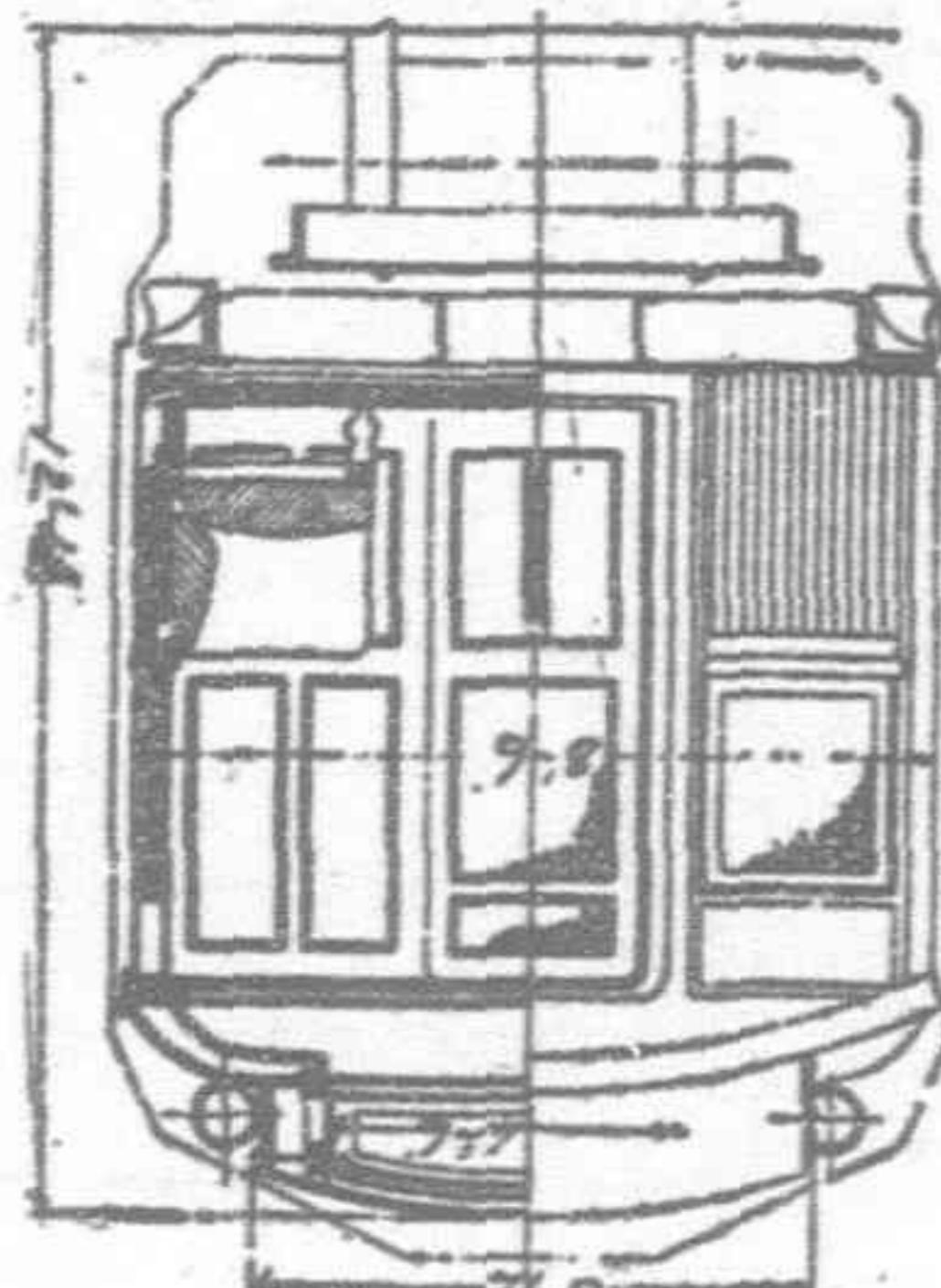
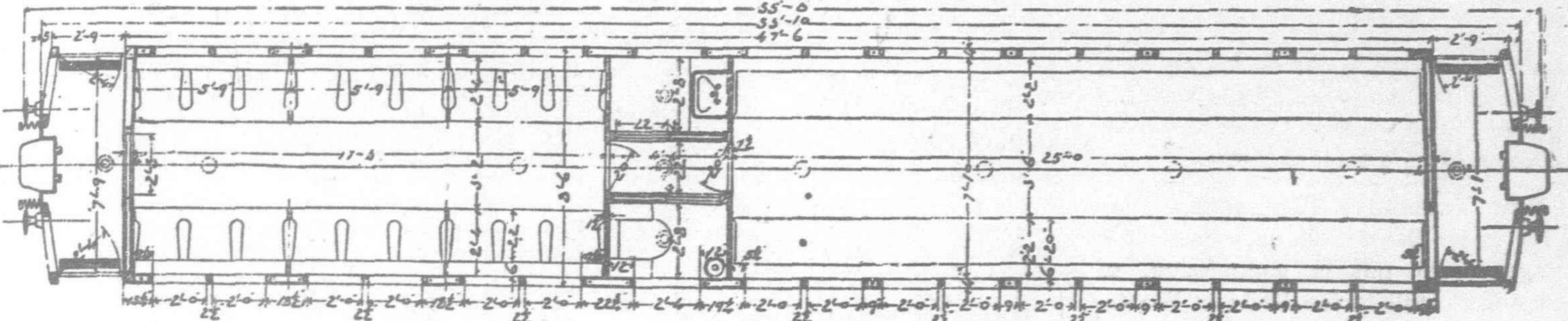
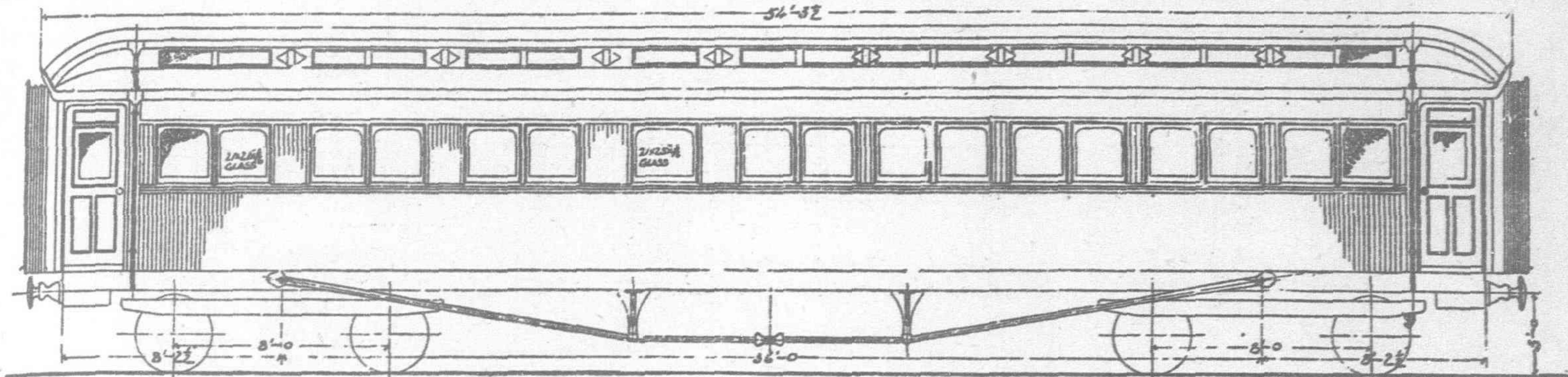
Elevation and Section of 15-ton Covered Wagon (of 1 368 c.f. capacity)



Elevation and Section of 13-ton Coal Hopper

Axles

At the time of the nationalization, more than a hundred patterns of axles were in use for the vehicles. In April 1910, a standard axle was adopted for 7-ton and 10-ton vehicles and in accordance with this all the other dimensions have gradually been remodelled. The adoption of tyred wheels was also decided upon, the cast-iron and chilled wheels being gradually remodelled or replaced by steel.



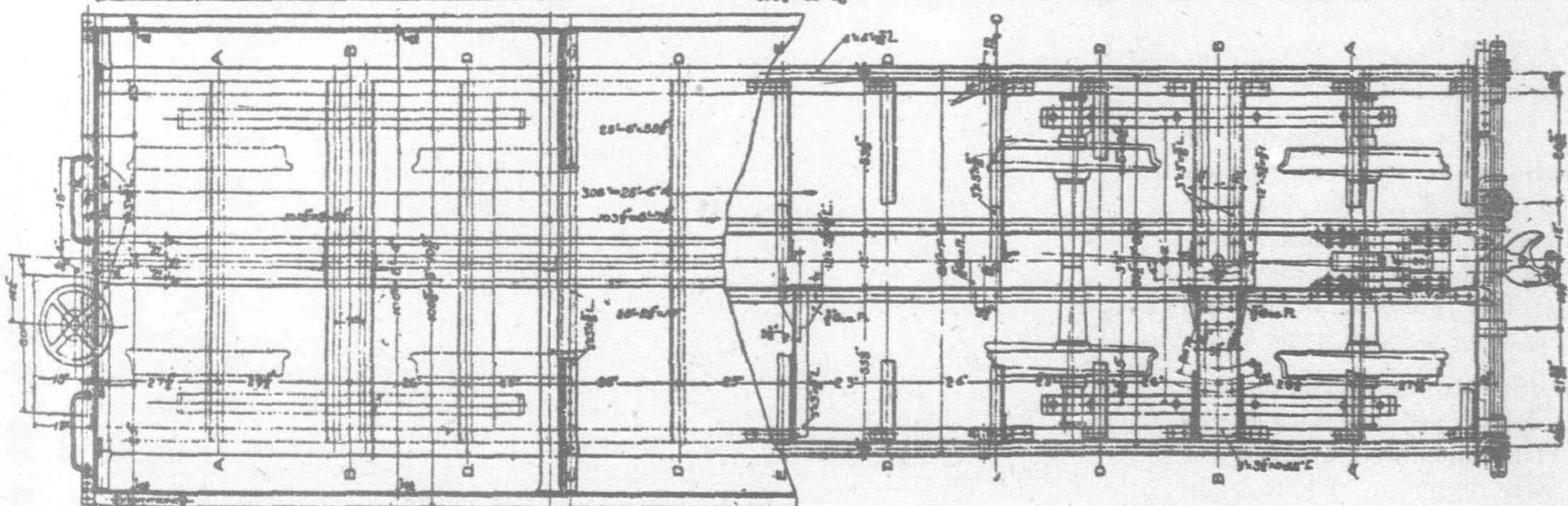
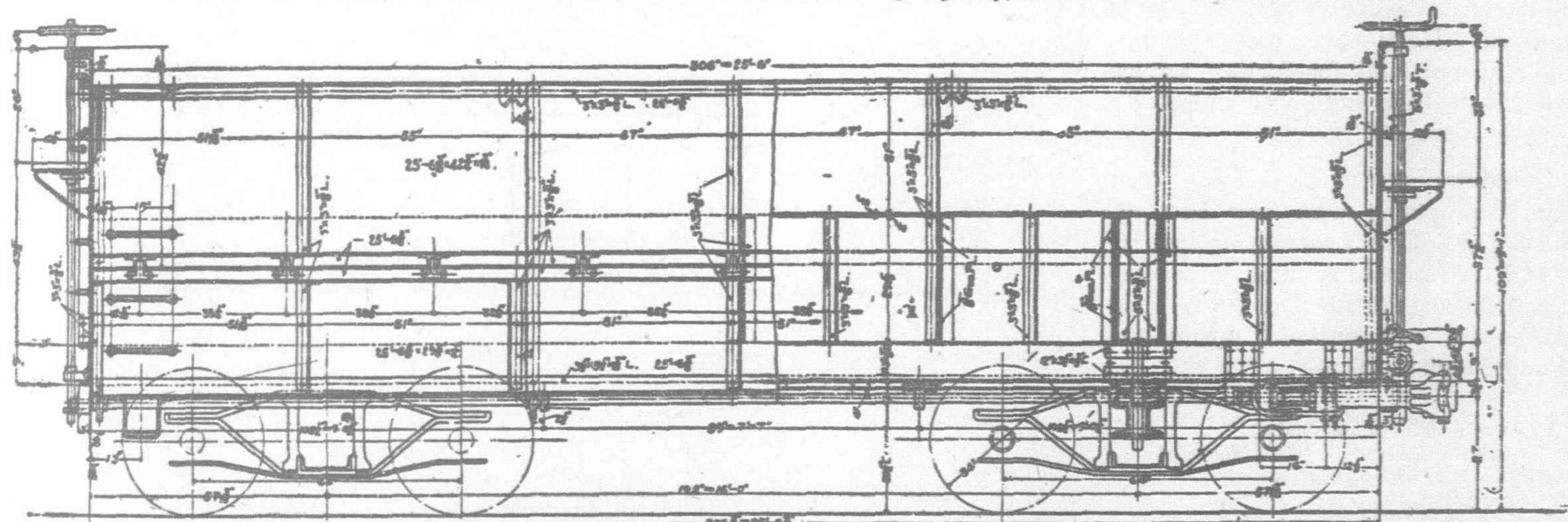
NEW LOCOMOTIVES.—During the year 1917-18, 118 superheated tender locomotives were added to the stock. Of the number 6 were built in the Railway Works and the others under contract with home car-builders. Eight tank locomotives came into State possessions resultant upon the purchase of two private railways during the year under review.

Ten tank and 3 tender locomotives, all obsolete were scrapped off, and 2 tank locomotives were sold, being unfit for use on the State Lines.

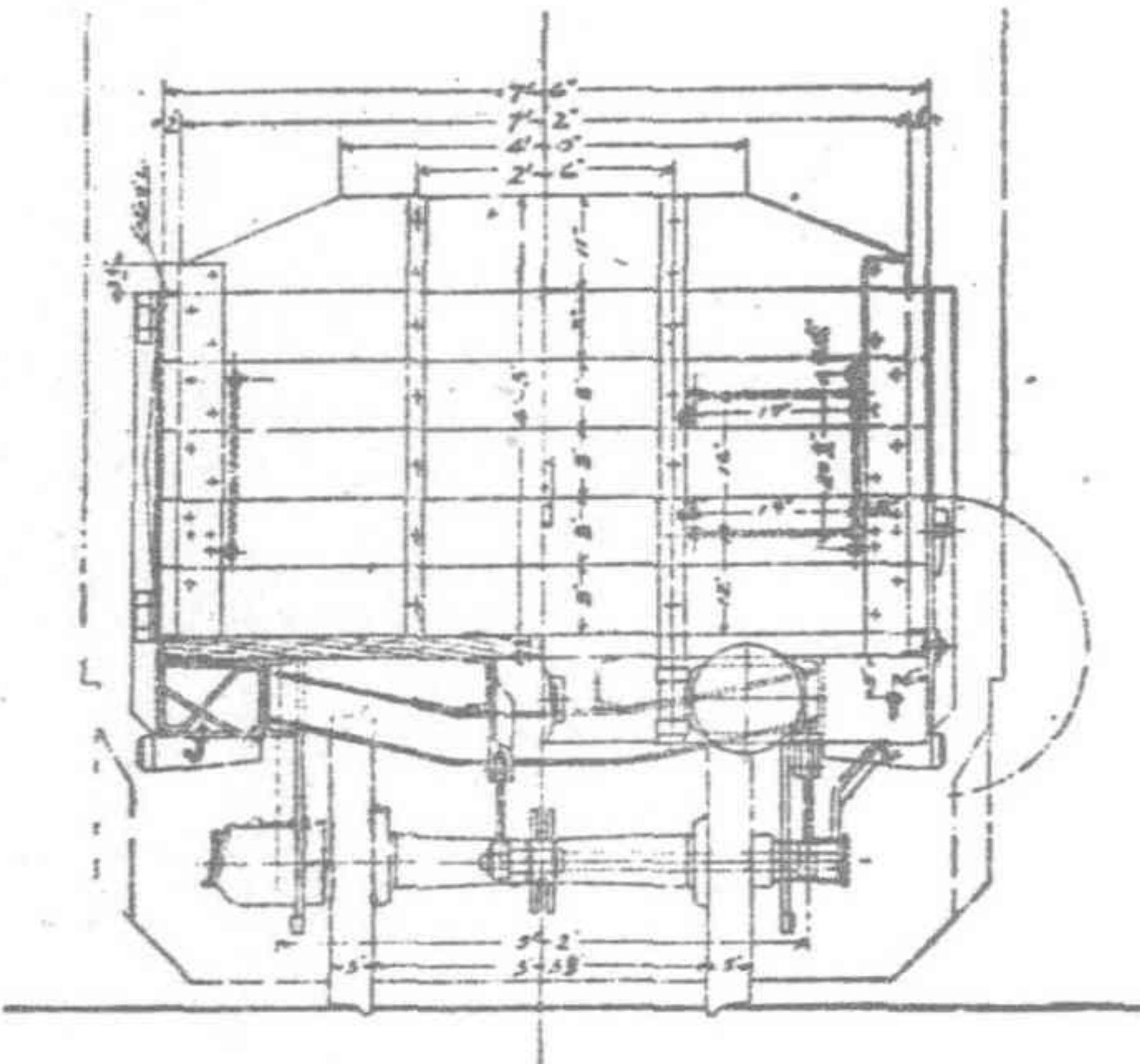
IMPROVEMENT IN LOCOMOTIVES.—During the year the boiler was remodelled for 16 engines, accessories to the boiler and tubes renewed for 68 engines, the cap remodelled for 16 engines, the automatic buffer coupler fitted for 19 engines, brakes renewed for 22 engines and steam-heaters for 29 engines. Besides 35 engines were in the repair shop to have the normal pressure increased and the cylinder diameter shortened.

LOCOMOTIVE STOCK.—The total number of

Standard Type for 4-wheel Bogie 1st and 2nd Class Composite; Seating Capacity, 18 1st Class seats and 30 2nd Class seats.



24-ton Coal Truck



locomotives on the books on March 31st, 1918 was 1,205 tanks (including seven 2' 6" gauge), 1,603 tenders, 12 electric locomotives, making a total of 2,820.

NEW PASSENGER CARRIAGES.—During the year 1917-18, 56 new passenger carriages were put in commission, of which 4 were built in the Railway Works, and 52 under contract with home car-builders and the others made over from the purchased railways. Twenty-seven electric trams were added to the list. The car-bodies of these new trams were built in the Railway Works or under contract with home car-builders, while the electric equipment and the brakes were purchased from abroad and, erected in the Railway Works. 209 passenger carriages and 13 electric trams were constructed. Altogether 22 passenger carriages were struck off the list during the year having either been damaged in accidents or become antiquated. Thirty-three passenger carriages rendered unfit for further service on the State lines were sold to private railway concerns.

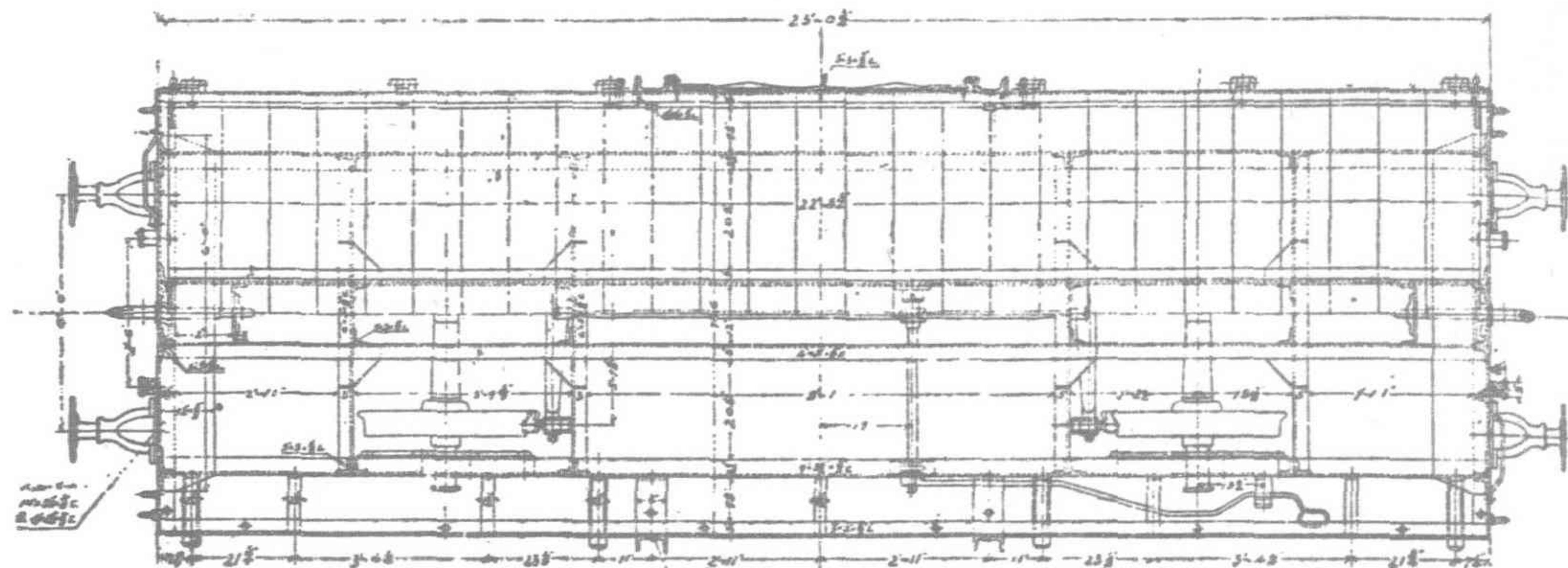
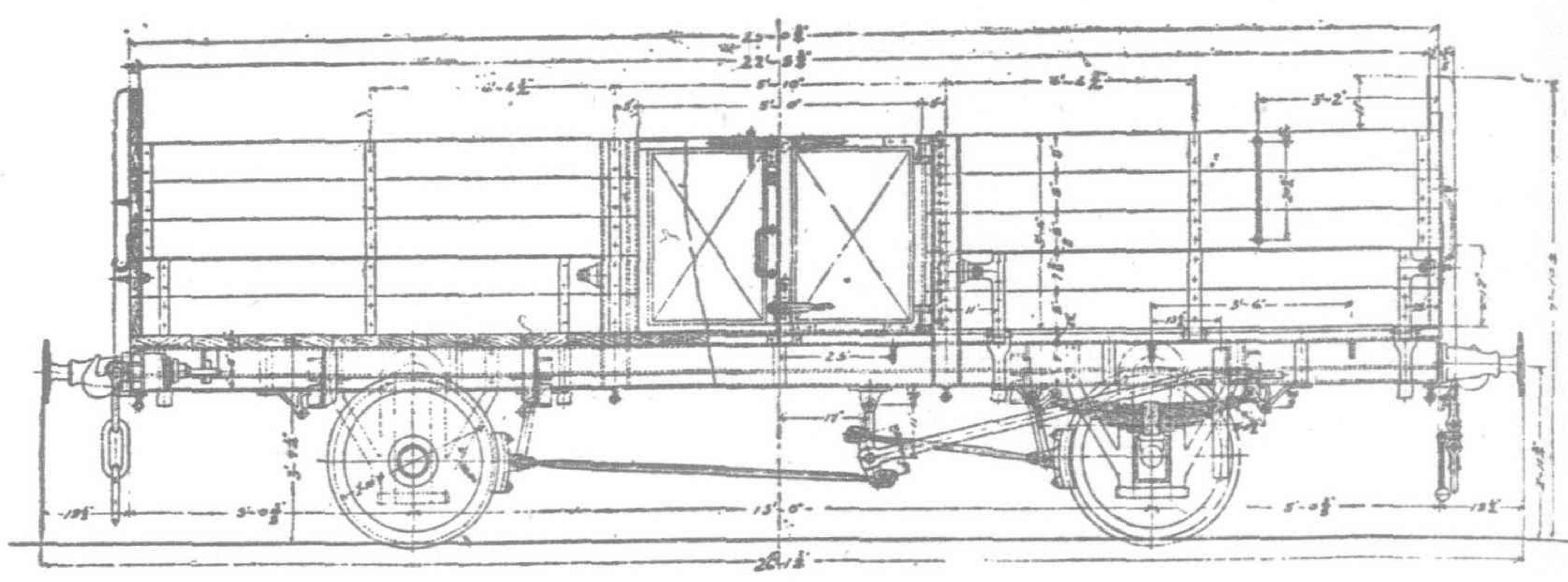
IMPROVEMENTS IN CARRIAGES.—The policy of providing with new and additional lavatories and ventilating apparatus and of increasing and improving brakes, heating, electric and gas lighting arrangements was continued during the year under review, viz.:—

No. of cars.

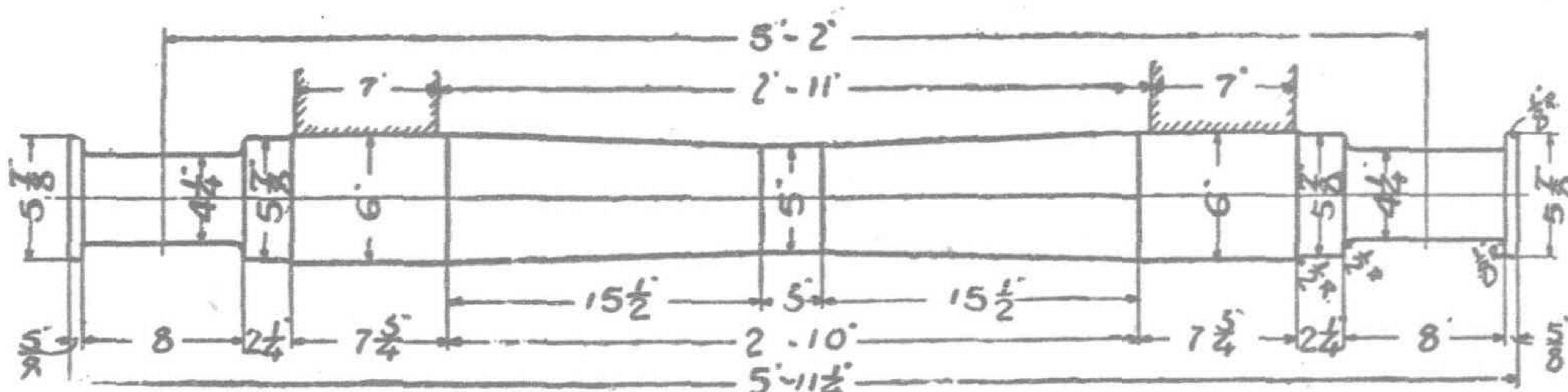
Improvements in car-body and its interior	for 209
Axes and axle-boxes remodelled	2
Brakes remodelled	48
Steam heaters remodelled	68
Cushions, curtains, etc.	144
Electric lamps	379
Gas lighting arrangements	67

COACHING STOCK.—The number of passenger carriages in stock on March 31st, 1918 totalled 6,731, which 444 were of 6-wheel bogie, 2,179 4-wheel bogie, 4,087 4-wheel and 6-wheel, and 20 steam motor cars. The number of electric trams was 152, all of 4-wheel bogie.

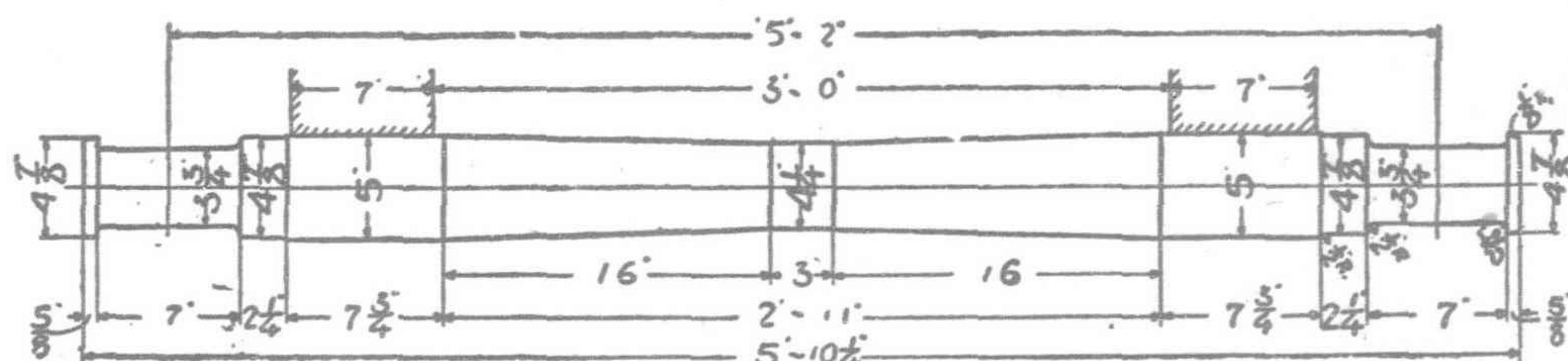
NEW GOODS WAGONS.—The number of new goods wagons put in service during the year 1917-18 amounted to 2,503, of which 244 were built in the Railway Works, 2,139 under contract with home car-builders, and the other 120 acquired through the purchase of private railways.



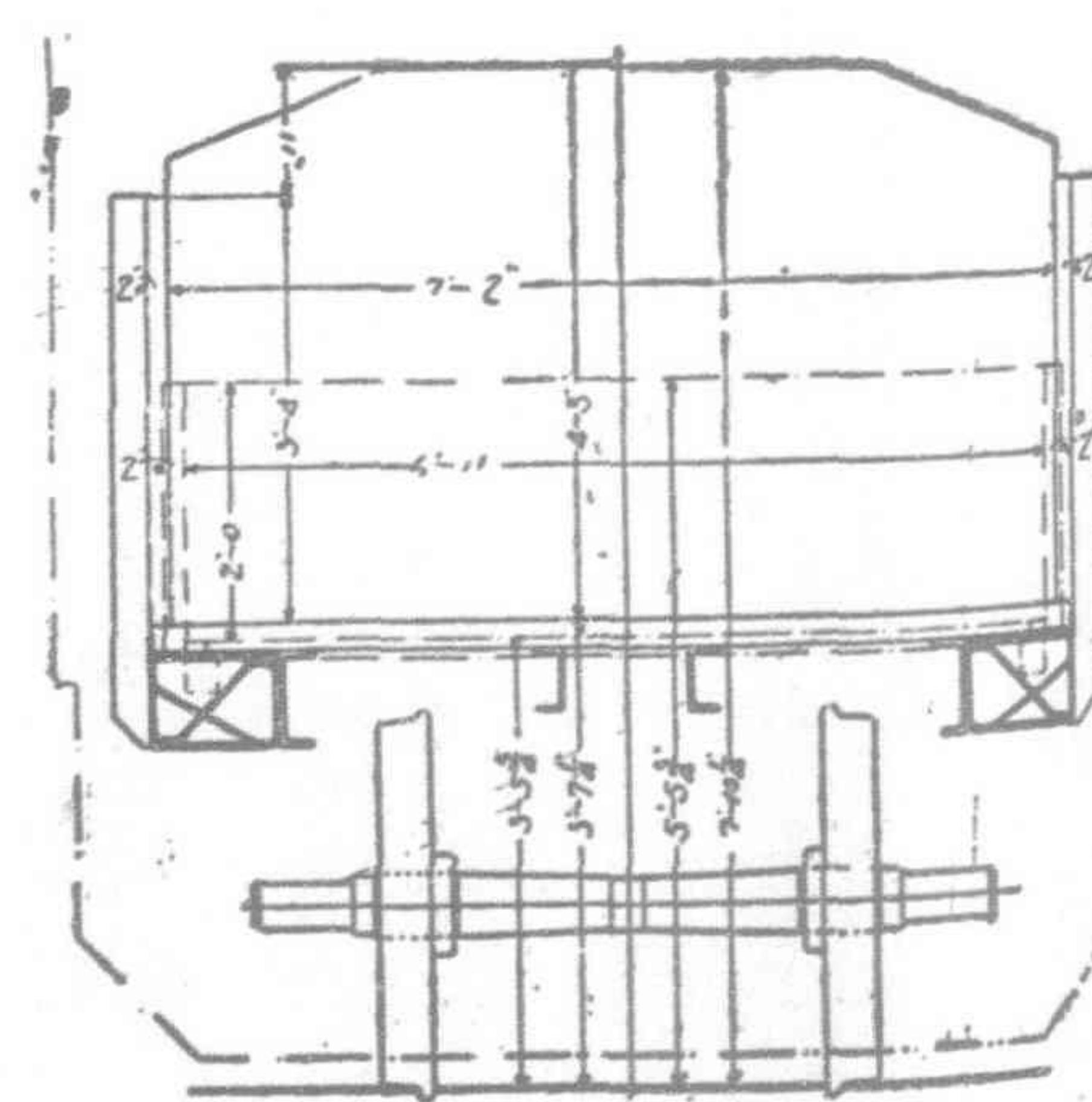
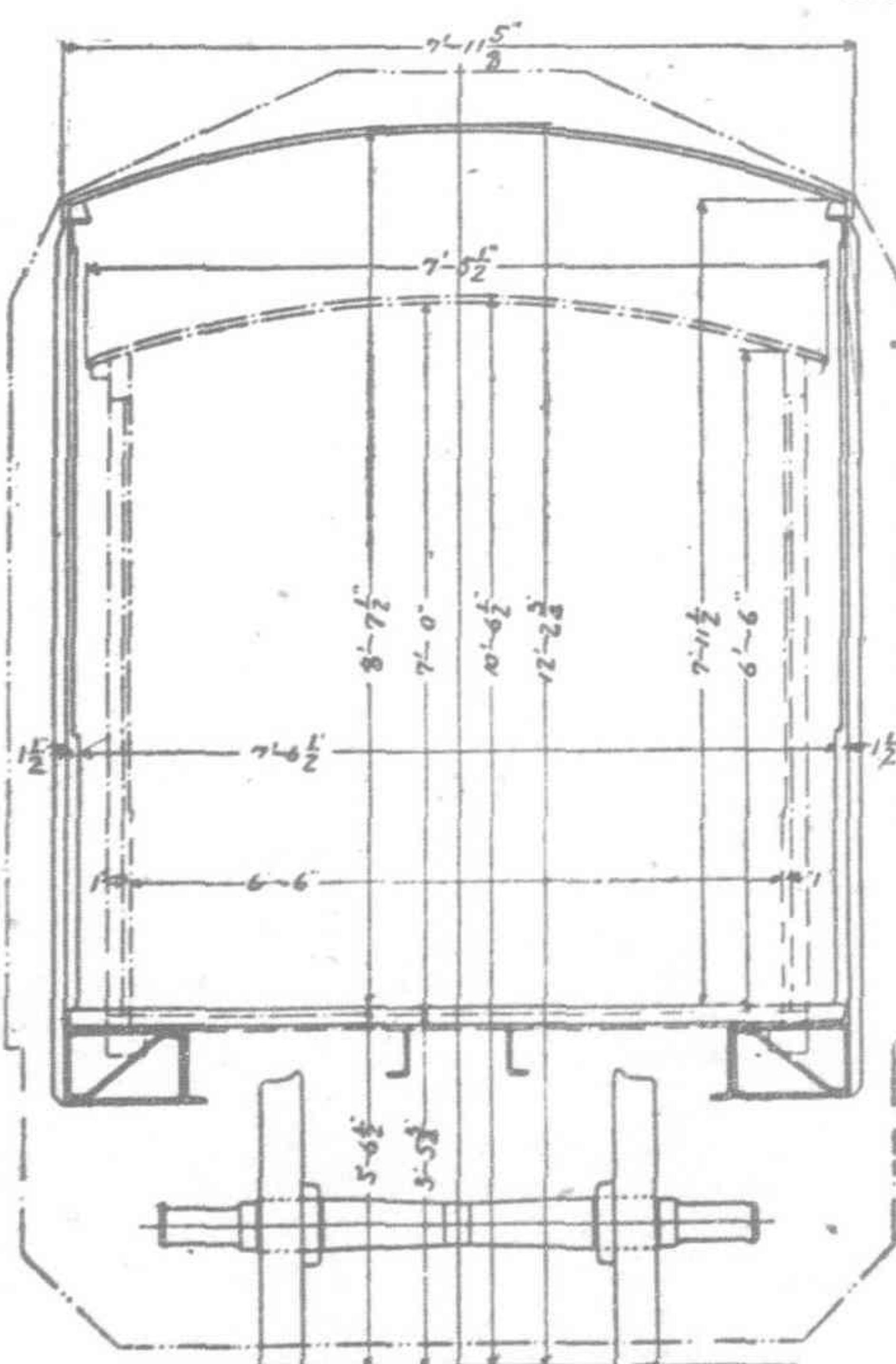
15-ton Open Truck (of 658 c.f. capacity)



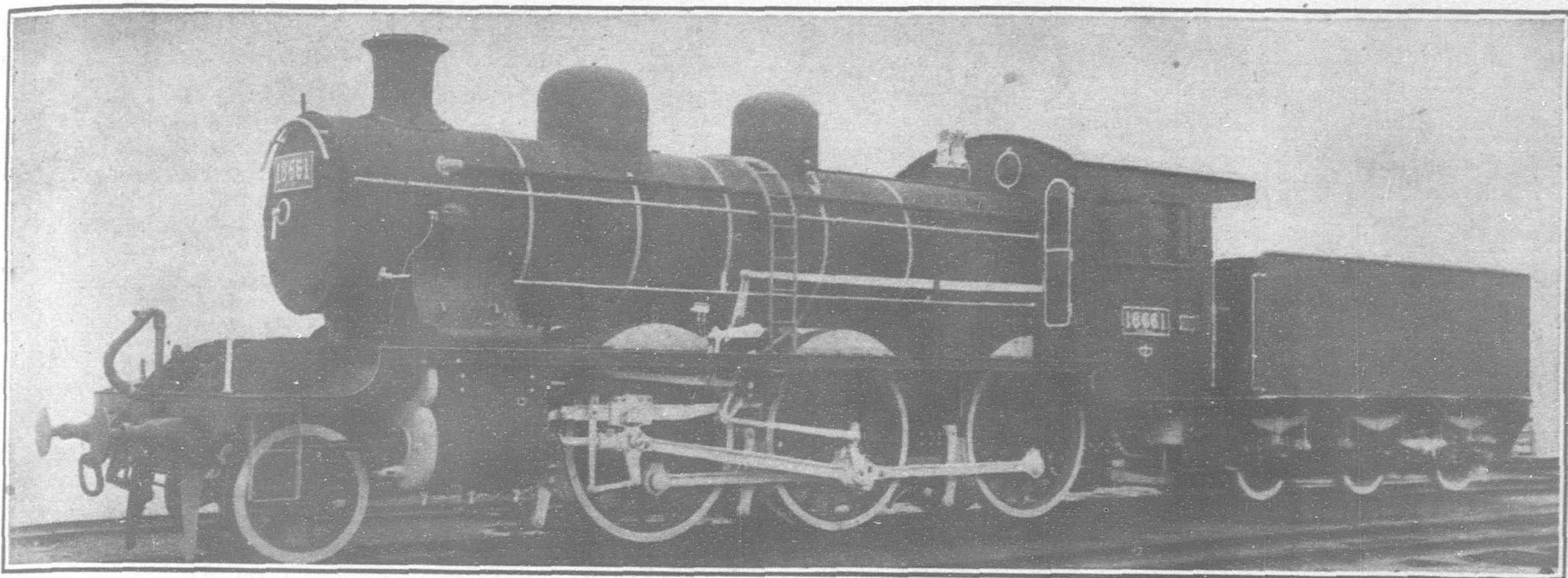
Standard 7-ton Axle



Standard 10-ton Axle



Elevations of Freight Wagons—before and after the Nationalization



PASSENGER ENGINE

Cylinders— $18\frac{1}{2}'' \times 24''$
Driving wheels, dia.—63"

Steam pressure—180-lbs. Water-heating surface—952 sq. ft.
Grate area—17.5 sq. ft. Superheating surface—297 sq. ft.

Weight total engine—46.02 tons
Tractive force—19,900-lbs.

Locomotive and Shop Practice on the Japanese Railways

ONE of the features of Japanese locomotive practice during the ten years of government ownership and operation has been the general adoption of heavier and more powerful locomotive engines. The construction of Class 6700 (4-4-0) powerful passenger engines in 1910 marked the first step in this direction. Following this came the importation of some 4-6-0 passenger engines (Class 8700) from England and a number of superheater passenger locomotives of 4-6-0 type (Class 8800 and Class 8850) and 4-6-2 type (Class 8900) from the United States and Germany. The locomotive engine using superheated steam was thus introduced on Japan's railways and its efficiency and economic value were soon fully realized in actual train service on the Tokyo-Shimonoseki Line. In consequence, only a small number of saturated steam locomotives were built in 1912 and 1913, all the locomotives built since 1914 being equipped with superheaters. Among the several other classes adopted in 1912, the Class 4100 freight locomotives, with wheel arrangement of 0-10-0, were placed for a heavy mountain grade service on the O-U Line, and the result was very favorable. A number of Class 4110 engines, which were really the 4100 Class with improved boiler capacity, were built in 1913 and 1914.

The Mallet compound locomotives (0-6-6-0), which are represented by Classes 9750, 9800, and 9850, have not thrived much in Japan. Some of them were ordered from the United States and assigned to a very heavy grade service on the Tokaido Line. With their enormous hauling power, the Mallets have done a great deal in increasing the capacity of that mountain section, but

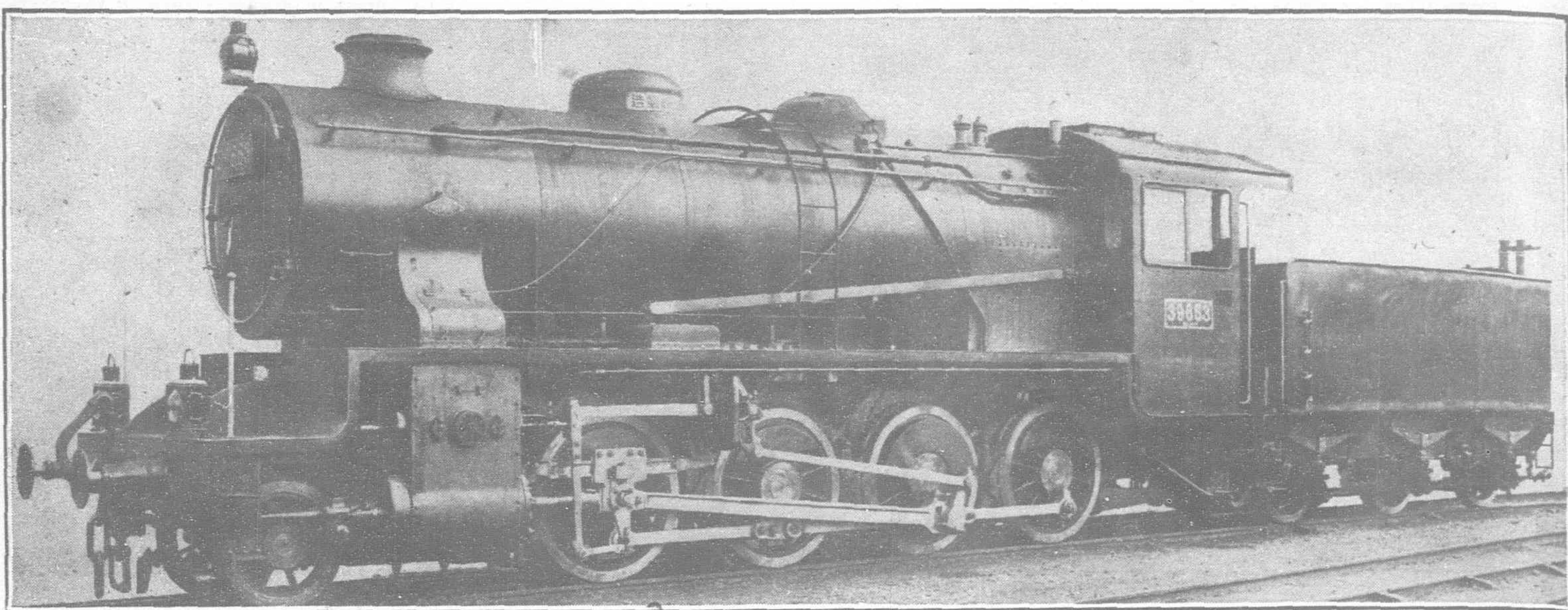
on account of their complicated construction and heavier maintenance cost, the extensive employment of this type is considered unwise for a service where engines of simpler construction answer the purpose.

The standardization of locomotive design was another conspicuous feature in the recent practices of their railways. The three classes—9600, 6760, and 8620—were adopted as the standards for new locomotives, as they proved in actual service to be the best suitable for the traffic conditions prevailing on the state railways. The Class 9600 locomotives, the largest and most powerful consolidation locomotives ever built in Japan, are particularly good for slow freight and heavy grade passenger services; and the Class 6760 American type locomotives are generally assigned to local passenger trains and express trains of moderate weight, while the Class 8620 Mogul locomotives, though originally designed for passenger service, are found equally efficient in handling both express trains and freight trains. At present, locomotives belonging to these three classes are most extensively used on the state system, and it is the policy of the Japanese railways administration that all new locomotives should be built according to these standards, except some 0-10-0 type engines, which are to be assigned to certain extremely heavy mountain grades.

An official report says: The nationalization of the railways gave no small impetus to the growth of Japan's locomotive industry, which was really in its infancy at that time. The domestic plants and works have, since then, steadily developed and have attained a high state of efficiency in the matter of production and workman-



Interior of Erecting Shop at Hamamatsu Locomotive Works



FREIGHT ENGINE

Cylinders—20" x 24"
Driving wheel, dia.—49"

Steam pressure—180-lbs.
Grate area—25.0 sq. ft.

Water-heating surface—1,414 sq. ft.
Super-heating surface—347 sq. ft.

Weight total engine—59.40 tons
Tractive force—29,900-lbs.

Built at the Hiogo Works of the Kawasaki Dockyard

ship, so that at present they are well qualified to take the place of their foreign competitors in filling new orders. Hundreds of our new powerful locomotives, belonging to the three standard classes previously referred to, have all been designed by our engineers and built in Japan. In short, our locomotive industry is no longer in a mere experimental stage; it has become quite firmly established.

Representative Locomotives

In the preceding paragraph we referred briefly to the general growth in capacity and the development of our locomotives. Here we shall compare the dimensions of our representative locomotives at the beginning of the government management with those of the engines at present in use, in order to show the advancement made in our locomotive practice.

Ten years ago, the most important express train on the Tokaido Line ran with only four or five bogie carriages coupled, but to-day the same express is composed of double the number of heavy cars and is running at a much higher speed. The following table shows the principal dimensions, etc., of the locomotives used in the express train service on the Tokaido Line ten years ago and of those used to-day:—

	Engines at the time of Nationalization	Engines of to-day
Class	...	6350
Type	...	4-4-0
Cylinders, diameter and stroke	16 in. and 24 in.	18½ in. and 24 in.
Driving wheel diameter	5 ft.	5 ft. 3 in.
Boiler pressure	160 lbs. per sq. in.	180 lbs. per sq. in.
Grate area	14.3 sq. ft.	19.6 sq. ft.
Water-heating surface	875 sq. ft.	1,097 sq. ft.
Superheating surface	—	368 sq. ft.
Total heating surface	—	1,465 sq. ft.
Weight on drivers	20.14 tons	38.16 tons
Weight of engine, in working order	32.05 tons	54.62 tons
Weight of tender, loaded	24.06 tons	28.98 tons

From the marked difference in the dimensions as shown above, the relative hauling powers of the two may easily be judged. Assuming the train load of Class 6350 to be 150 tons and of Class 8850 to be 300 tons, the maximum sustained speeds of the engines on different gradients of track are estimated to be as follows:—

Approximate maximum sustained speeds
(miles per hour)

Class 6350 locomotives Class 8850 locomotives

Level track...	53	60
1/150 up-grade	33	35
1/100 up-grade	25	25

We shall next show the comparative dimensions of Class 2120, which was the standard freight engine at the time of nationalization,

and of Class 9600, the present standard freight locomotives.

	Engines at the time of Nationalization	Engines of to-day
Class	...	2120
Type	...	0-6-2
Cylinders, diameter and stroke	16 in. and 24 in.	20 in. and 24 in.
Driving wheel diameter	4 ft. 1 in.	4 ft. 1. in.
Boiler pressure	160 lbs. per sq. in.	180 lbs per sq. in.
Grate area	14.1 sq. ft.	25.0 sq. ft.
Water-heating surface	1,000 sq. ft.	1,376 sq. ft.
Superheating surface	—	363 sq. ft.
Total heating surface	1,000 sq. ft.	1,739 sq. ft.
Weight on drivers	39.95 tons	51.90 tons
Weight of engine, in working order	48.98 tons	59.40 tons
Weight of tender, loaded	—	30.03 tons

The tractive capacities of these engines on different grades and at different speeds are estimated as follows:—

	Train Load behind (tender) Drawbar Class 2120	Class 9600
Speed ...	15 miles per hour.	19 miles per hour.
1/100 up-grade	270 tons	540 tons
1/40 up-grade	100 tons	200 tons

As previously mentioned, the tractive capacity of our motive power has been more than doubled within the ten years. It need scarcely be added that this phenomenal progress, though undoubtedly attributable in the main to the steadily increasing volume of traffic in recent years, must have materially accelerated the development of our industries and ultimately of traffic.

Lastly, the general dimensions and weight of the heaviest engines in service at the time of nationalization and of those at present in use are shown as under.

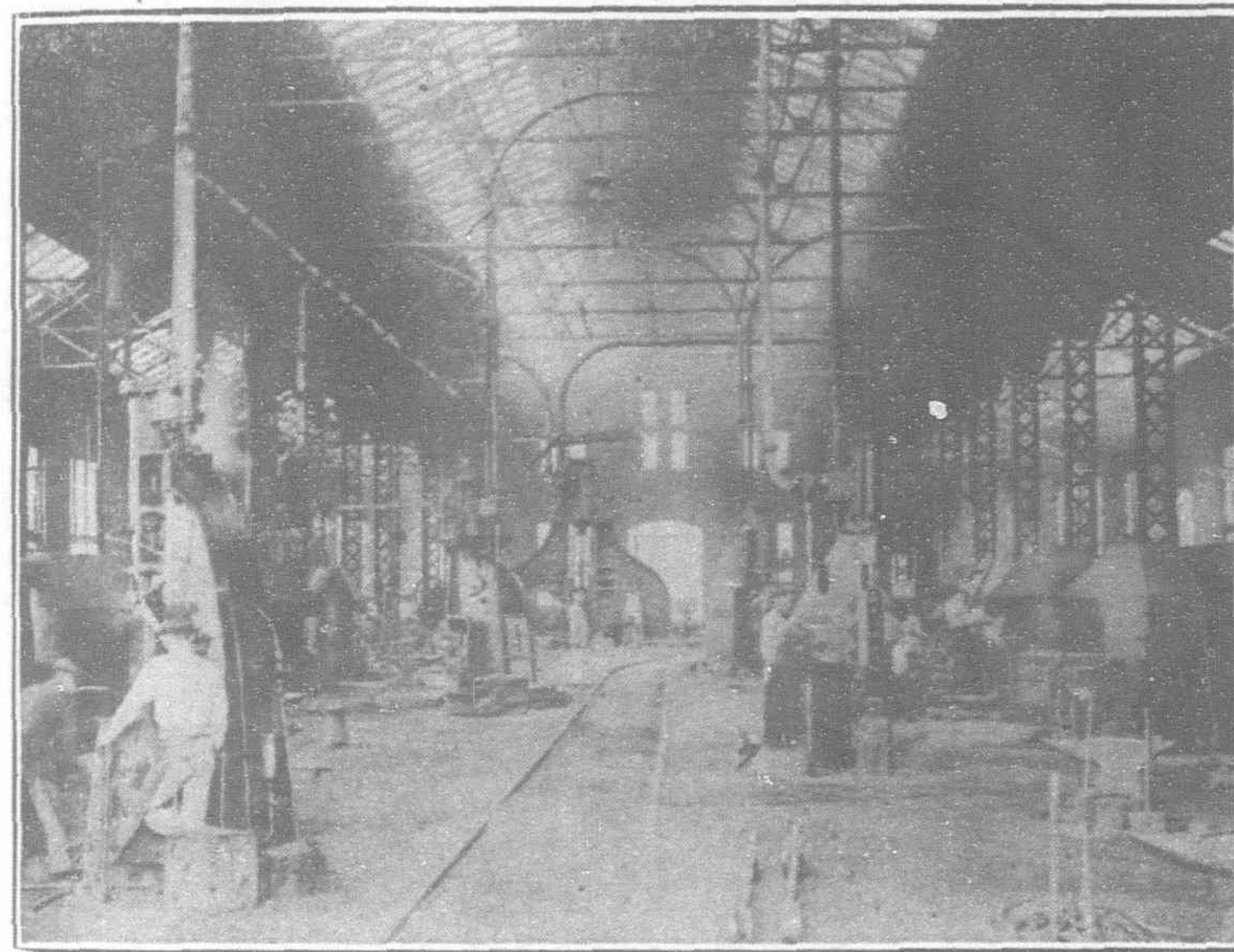
	Engines at the time of Nationalization	Engines of to-day
Heaviest in weight on drivers and in total weight		
Class	...	9400
Type	...	2-8-0
Cylinders, diameter and stroke	18 in. and 24 in. and 25½ in.	16½ in., 24 in. and 24 in.
Driving wheel diameter	3 ft. 8 in.	4 ft. 1 in.
Boiler pressure	180 lbs. per sq. in.	200 lbs. per sq. in.
Grate area	25 sq. ft.	21 sq. ft.
Water-heating surface	1,795 sq. ft.	1,452 sq. ft.
Superheating surface	—	340 sq. ft.
Total heating surface	1,795 sq. ft.	1,792 sq. ft.
Weight of engine, in working order	54.62 tons	68.12 tons
Weight of tender, loaded	34.87 tons	30.12 tons
Total weight of engine and tender...	89.49 tons	98.24 tons
Weight on drivers	47.52 tons	68.12 tons

The comparison of the heaviest engines in service, then and now, will indicate that, measured in terms of tons, the development of our locomotive power has not been very considerable. It may be easily inferred, however, that both as regards hauling capacity and efficiency the new engines show a marked improvement on their predecessors.

Design of Locomotives

In designing locomotive engines of greater tractive force and higher speed to meet the rapidly growing traffic, our locomotive designers are now seriously hampered by the limitations imposed by the narrow gauge, which does not easily admit of enlargement of the fire-grate, increase in the diameter of drivers, or the providing of the necessary space for the lateral play of driving wheels.

With the exception of engines provided with a trailing-truck, the fire-box is generally placed between the pair of driving wheels and the width of the fire-grate is, therefore, limited by the inside distance between the pair of driving wheels. In the case of locomotives for 3-ft. 6-in. gauge tracks, the fire-box cannot be made wider than 2-ft. 3½-in. with a maximum grate area of about 20 sq. ft. In order, therefore, to adopt a fire-grate of greater area, it is necessary either to provide trailing-trucks or to contrive the frame so that the fire-box can be located over the driving wheels.



Interior of Smithy, Omiya Works

The provision of trailing-trucks involves a more complicated construction of locomotives, not to speak of the possible interference with the construction of the ash-pan, seeing that on narrow gauge tracks an ample allowance must be provided for the lateral movement of the truck wheels. If, however, the fire-box be placed over the drivers, the centre line of the whole boiler may be extremely elevated, and this, in turn, may increase the risk of possible upsetting of the engines. In our practice we follow the latter method and make the wheel arrangement as simple as possible, by raising the boiler centre within its safe limit. For instance, in the case of Class 9600 and Class 4110 engines, the fire-box is placed over the rear pair of driving wheels, and the centres raised to heights of 8-ft. 6-in. and 8-ft. 5-in. respectively above the rails. This is probably the highest centre among the locomotive boilers ever built for 3-ft. 6-in. gauge tracks, and indeed even on the 4-ft. 8½-in. gauge railroads such a great value for the ratio of the centre height to the gauge may possibly be without precedent. With this high boiler centre, safe working may be ensured for a freight locomotive with drivers of 4-ft. 1-in. diameter, but not for an express passenger engine, which has a much larger driving wheel and runs at much higher speeds. For example, if, in a locomotive with 5-ft. 3-in. diameter, the boiler centre be made 8-ft. high, the centre of gravity of the engine may be approximately equal in height to that of the freight engines just mentioned, and may therefore not be safe for high

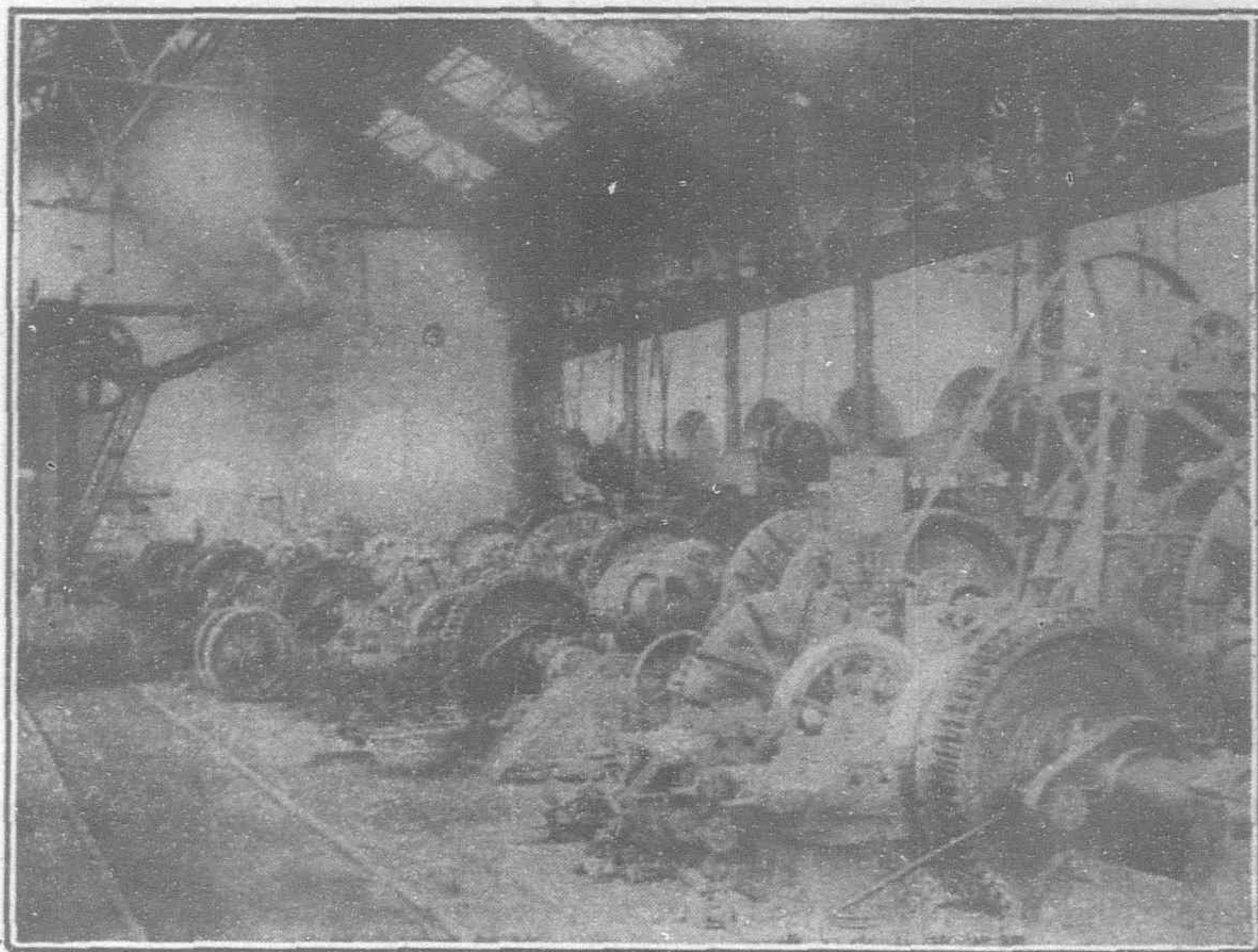
speed service. This explains why the provision of trailing-trucks becomes imperative when a fire-grate greater than 20 sq. ft. is required by a high speed passenger locomotive.

The demand for greater speed has necessitated the use of larger driving wheels. At the time of nationalization, 5-ft. was the standard diameter for the express engines, but in the locomotives of later design this was increased to 5-ft. 3-in., which is the largest in our present practice. The employment of trailing-trucks may possibly allow the engine to have larger driving wheels, but for a narrow gauge locomotive it would be very difficult, if not impossible, to have driving wheels greater than 6-ft. in diameter.

In this connection, one thing that deserves mention would be the use of the two-wheel leading truck of Class 8620 engines (2-6-0) coupled with the front pair of driving wheels to make it serve as an ordinary four-wheel swivelling truck or bogie. In principle this contrivance resembles the Zara system, but the detail design is our own device.

Railway Workshops

The consolidation of the railways served as an occasion for completely reorganizing the railway workshops with a view to increasing their efficiency. It enabled the railway management to



Interior of Machine Shop at Omiya Works

readjust the distribution of work among the plants located in different parts of the system, and thereby ensure the concentration of work, the full advantage of production on a large scale being thus gained.

Under the régime of diversified control, each railway had its own shops for the manufacture and maintenance of equipment. For convenience in getting the requisite supply of labor and material, these railway plants were generally centred in the large cities, in most cases at termini or junctions of the leading lines, as may be illustrated by the Shimbashi and the Omiya workshops centred about Tokyo; the Kobe, the Hyogo, and the Takatori workshops about Kobe; the Kokura, the Yukuhashi, and the Wakamatsu workshops in the northern part of Kyushu; and the Temiya, the Iwamizawa, and the Asahigawa in the western part of Hokkaido.

This state of affairs had to be completely altered after the nationalization. In effecting the redistribution of the railway plants, the railway management had to look at the matter from the point of view of the railway interest as a whole, and, as a result, radical renovation was effected in this direction during the ten years under review. Thus the ten leading plants, or practically half the whole number—Nagaoka, Numazu, Shimbashi, Hyogo, Kobe, Ikeda, Hiroshima, Yukuhashi, Temiya and Iwamizawa—were closed down, while eight new plants were created at Tsuchizaki, Oi, Hamamatsu, Kanazawa, Yonago, Naebo, Hakodate, and Kushiro, and five

detached plants at Sumidagawa, Shiodome, Nagoya, Tokushima, and Wanishi.

On March 31, 1917, there were 20 plants and 5 detached plants in operation, distributed as under:—

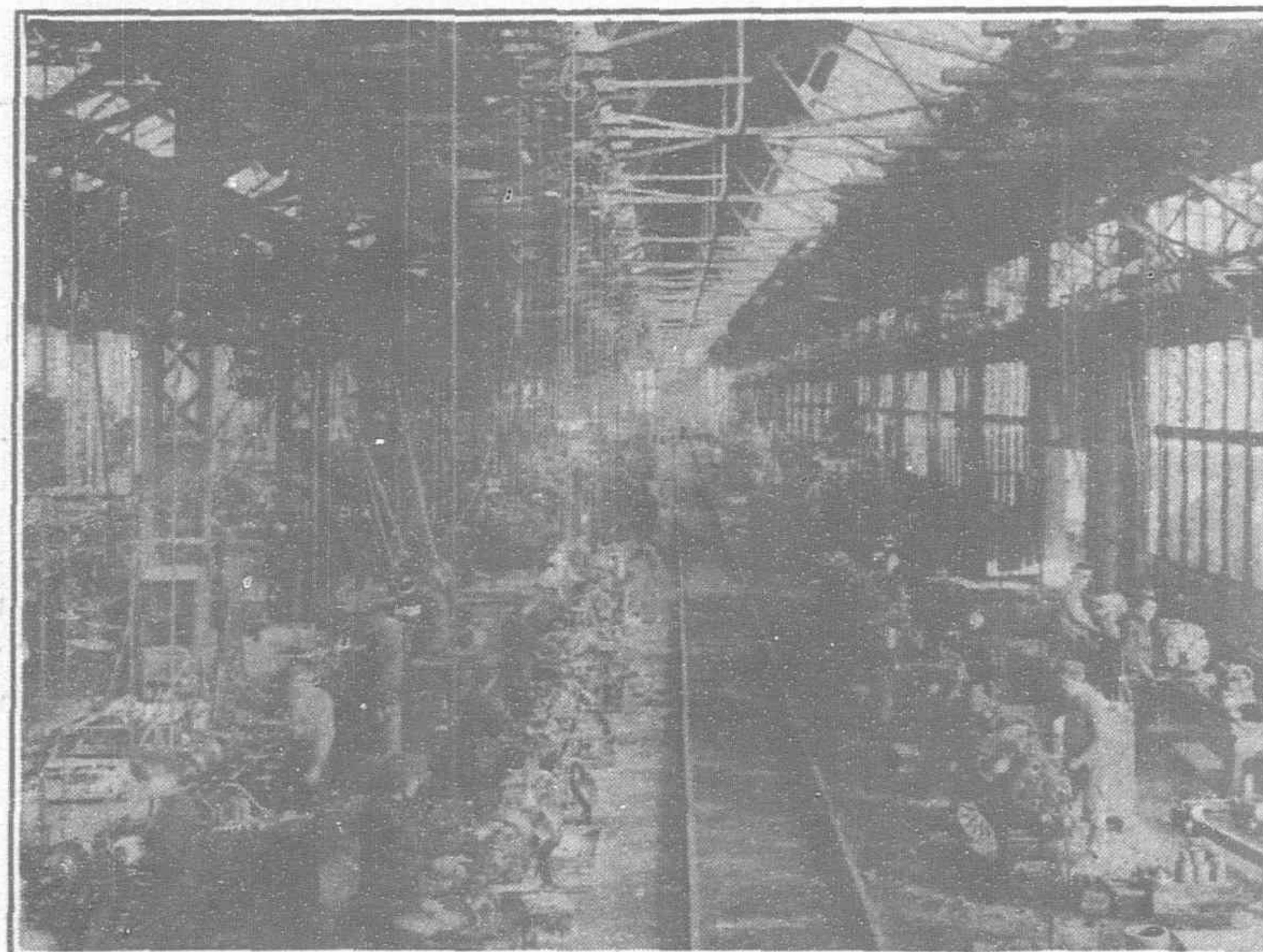
Main Island—Omiya, Nagano, Tsuchizaki, Morioka, Kinshicho, Oi, Hamamatsu, Yokkaichi, Kanazawa, Takatori, Minatomachi, Yonago, Shimonoseki, Sumidagawa (detached), Shiodome (detached), Nagoya (detached).

Shikoku—Tadotsu and Tokushima (detached).

Kyushu—Kokura and Wakamatsu.

Hokkaido—Naebo, Hakodate, Asahigawa, Kushiro, Wanishi (detached).

At the time of nationalization, owing to the imperfect development of the Japanese industry, the railways had to depend solely upon foreign manufacture for the supply of locomotive stock, only



Interior of Machine Shop at Hamamatsu Locomotive Works

the manufacture of new carriages and wagons being undertaken at the railway workshops. Under the new régime the policy of supporting and helping forward the progress of domestic industry has been consistently pursued, and it was not long before the native car-builders attained greater efficiency in workmanship and capacity. By 1912-13 the entire orders for new equipment could be placed with the domestic plants, and the railway workshops could devote themselves to the repair of equipment, save for the manufacture of certain special cars.

At the same time arrangements were made for ensuring the prompt repair of equipment in the shops. The limits of each plant for repair purposes were defined according to its capacity, and each was made responsible for the maintenance of the equipment in its own charge. The assignment of a definite amount of work to each plant has greatly added to its efficiency, and the number of cars detained in shops for repair has appreciably decreased.

Side by side with the repair work, a certain fixed standard was also laid down for limiting the number of goods vehicles to be returned monthly to each shop, the idea being to adjust the distribution of cars according to the requirements of traffic. The arrangement had the highly satisfactory effect of securing the efficient use of labor and workshop equipment, while on the other hand it increased the efficiency of car performance and ensured a longer term of service for the vehicles.

In assigning the limits of charge for each plant, special attention was directed to the concentration of the repair work of engines in the larger shops, with a view to eliminating the duplication of workshop equipment and facilitating their conveyance for repair. As arranged at present, twelve of the existing 20 plants have provi-

sion for the repair of engines and cars; one attends exclusively to the repair of engines; and the remaining seven are devoted to the repair of cars only.

As an illustration showing the increase in labor efficiency after the reorganization of the plants, the following figures, indicating the amount of repair work carried out in the shops, as compared with the number of days' work expended on it, may be recorded:—

	Year ending March 31	1911	1917	Inc. or dec. (1)	%
Locomotives (total weight in tons)	109,087	158,305	49,218	45	
Carriages (seating capacity) ...	221,170	297,281	76,111	35	
Wagons (loading capacity in tons)	258,270	427,313	169,043	65	
No. of days' work ...	2,657,504	2,569,427	▲ 88,077	▲ .3	

From the above it will be seen that, under the revised arrangements, a labor force 3 per cent. less was enabled to perform a work practically 50 per cent. greater than it achieved seven years ago.

The following statement summarizes the workshops and workmen at the end of each fiscal year during the decade:—

Year ending March 31	No. of work- shops	No. of work- men	No. of days' work	No. of days' work reduced	Average wages per day per man	
					Wagons	yen
1908 ...	22	12,930	—	3,747,238	2,420,089	.646
1909 ...	23	14,039	—	4,159,204	2,726,842	.656
1910 ...	23	13,322	3,732,804	3,900,864	2,642,855	.678
1911 ...	23	14,143	4,177,235	4,444,228	2,961,035	.666
1912 ...	24	15,658	4,670,762	5,149,314	3,383,514	.657
1913 ...	24	16,638	5,100,365	5,613,286	3,710,769	.733
1914 ...	17	17,026	5,335,578	5,267,433	3,512,294	.710
1915 ...	17	15,475	4,564,790	4,733,769	3,226,748	.707
1916 ...	23	14,176	4,289,563	4,434,376	3,052,741	.712
1917 ...	20	13,484	3,867,452	4,096,072	2,900,541	.750

N.B.—"No. of workmen" represents the average number as returned at the end of each month during the year.

"No. of days' work" is computed by multiplying No. of workmen at work by No. of working days.

"No. of days' work reduced" represents the results obtained by counting one day's work as 10 hours, a workman working for 15 hours per day being counted as doing 1½ days' work.

Canton's Peanut Trade

In view of the agitation in the United States to bar from importation Chinese peanuts, the following report of U. S. consul-general Bergholz, Canton, will be of interest:—

Of the local production of 200,000 tons, about 60 per cent. is used for food, 5 per cent. for making candy, 5 per cent. for export, and the remaining 20 per cent.—that is, the poorer quality which sells for half the quoted prices—goes to the oil factories. Dealers consider that the peanuts from Kwantung run the richest in oil, followed by those of Honan, Chihli, and Shantung in the order named. The nuts poorest in oil come from Siam and are imported only when the supply from other provinces in the Republic cannot meet the demand. In 1913, 4,894 tons of shelled peanuts valued at \$245,097 were exported to Hongkong for transhipment elsewhere. Neither the countries of ultimate destination nor the countries of origin of imports are given in the maritime customs returns from which these figures are taken. In 1918 the export was 373 tons valued at \$30,299 and in 1919, 325 tons worth \$31,927. The export of shelled peanuts was insignificant.

According to the maritime customs returns, the export of peanut oil abroad in 1918 and 1919 amounted to 182,532-lb., valued at \$25,267, and 958,666-lb., valued at \$126,004, respectively. The importation from foreign countries was 55,600-lb., worth \$5,210, and 25,323-lb., valued at \$2,404, respectively. No peanut oil was imported from other ports in China. The quantity brought into the province by inland routes cannot be ascertained.



The town of Sawankaloke on the Meh Tom

The Siamese State Railways

Conversion from Standard to Metre Gauge Now Under Way

THE twenty-third annual report of the Siamese state railways, covering the period, April 1, 1919 to March 31, 1920, has been presented by General Purachatra, commissioner-general, to Honorable Chao Phya Wongsa Nuprabadh, minister of communications; and it contains very interesting data regarding the conversion of the state lines from the 1.435 m. standard to metre gauge. Details:

NEW LINES UNDER SURVEY.—On May 7, 1919, a royal decree was promulgated authorizing the survey of a line from Petriew to Aranya Pradesa, a place within a few kilometres of the Cambodian frontier. On November 8, 1919, another royal decree was issued authorizing the survey of another line with a view to extending the existing Korat line to Ubol Rajdhani.

UNIFICATION OF GAUGE.—Decision has also been given for the unification of gauge, that is to say, all new state railway lines to be built to metre gauge, and all existing 1.435 m. or standard gauge lines to be converted into metre gauge within a period of ten years. This conversion will bring the Siamese state railway lines into uniformity of gauge with the railways of all the neighboring countries, *i.e.*, British Malaya, French Indo-China, and Burma.

BRIDGE ACROSS MENAM CHAO PHYA.—In connection with the scheme for unification of gauge, plans are to be prepared for joining up the state railway lines on the east and west banks of the Menam Chao Phya by means of a steel bridge, across the river, and for this purpose, a royal decree was promulgated on January 16, 1920, defining the zone of survey of the new line.

WORK OF CONSTRUCTION AND SURVEY.—Work of construction on the northern and southern lines proceeded satisfactorily during the year, in the case of the northern line railhead reached Km. 651/842, and on the southern line railhead reached the Sungai Golok River on the Siam-Kelantan boundary on March 31. Survey work on the eastern and north-eastern lines extensions was commenced immediately the royal decrees were issued, and where the lines have been definitely located, passing through unoccupied or undisputed lands, a certain amount of earthwork has also been begun. A survey party is working upon the line crossing the Chao Phya river, and it is hoped that definite location will soon be made.

WORK OF THE ROYAL ENGINEERS.—The administration of

the state railways greatly appreciates the value of the help given by the railway battalion of the royal engineers, who have undertaken the work of platelaying on the northern line, and whose rate of progress in this work has been astonishingly good.

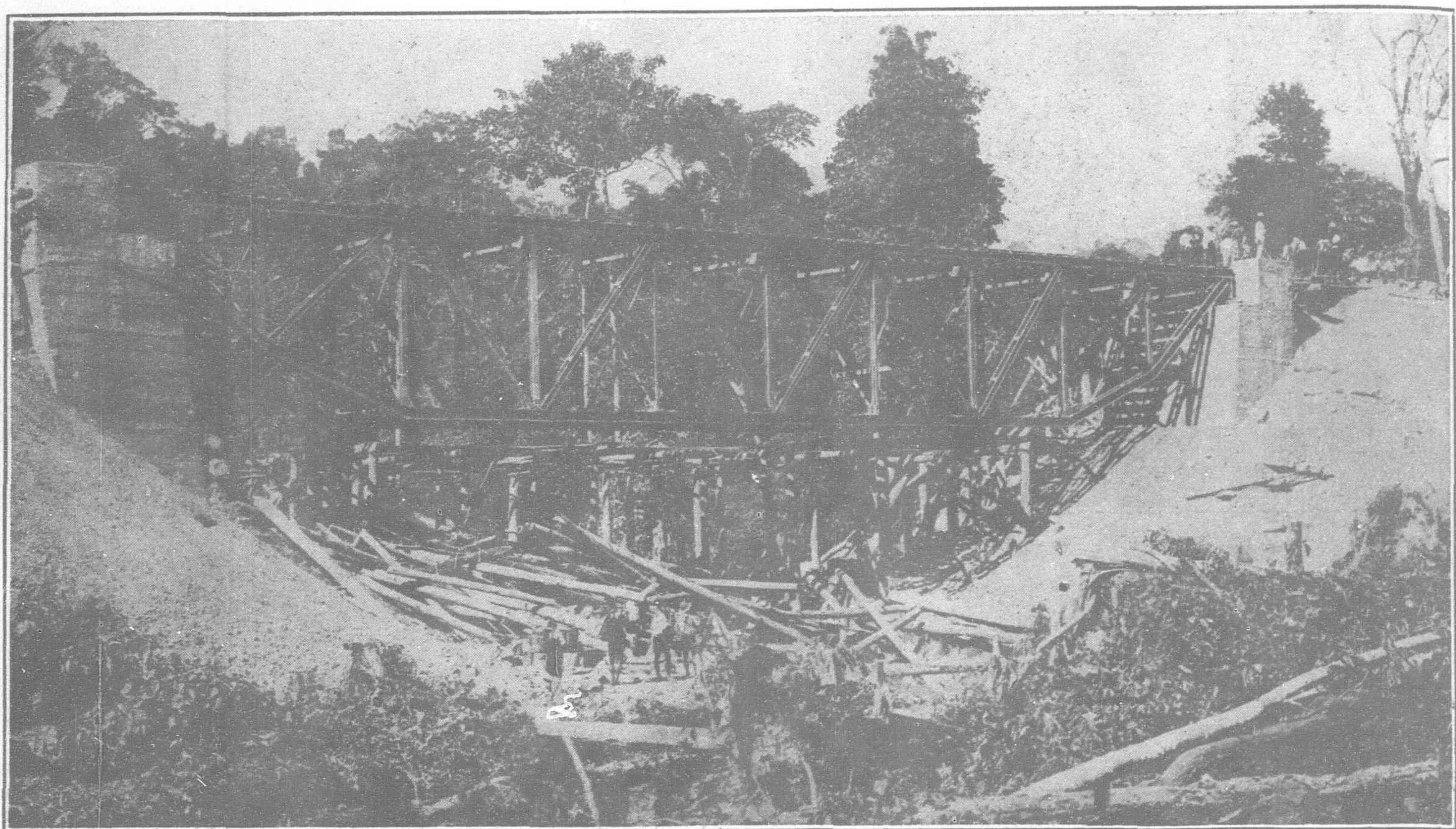
PERSONNEL OF THE STATE RAILWAYS.—Total of the staff and labor of all classes in the department at the close of the year was 9,132 distributed in the various services as follows:—

	Siamese	Euro-peans	Chinese	Indians	Others	Total
Central Administration ...	67	5	—	2	1	75
Construction Staff ...	1,474	6	1,023	10	18	2,531
Maintenance Staff ...	3,096	5	159	5	12	3,277
Mechanical Service ...	1,210	8	342	5	25	1,590
Traffic Service ...	1,322	1	39	23	4	1,389
Accounts Service ...	207	1	9	2	1	220
Stores Service ...	50	—	—	—	—	50
Total ...	7,426	26	1,572	47	61	9,132

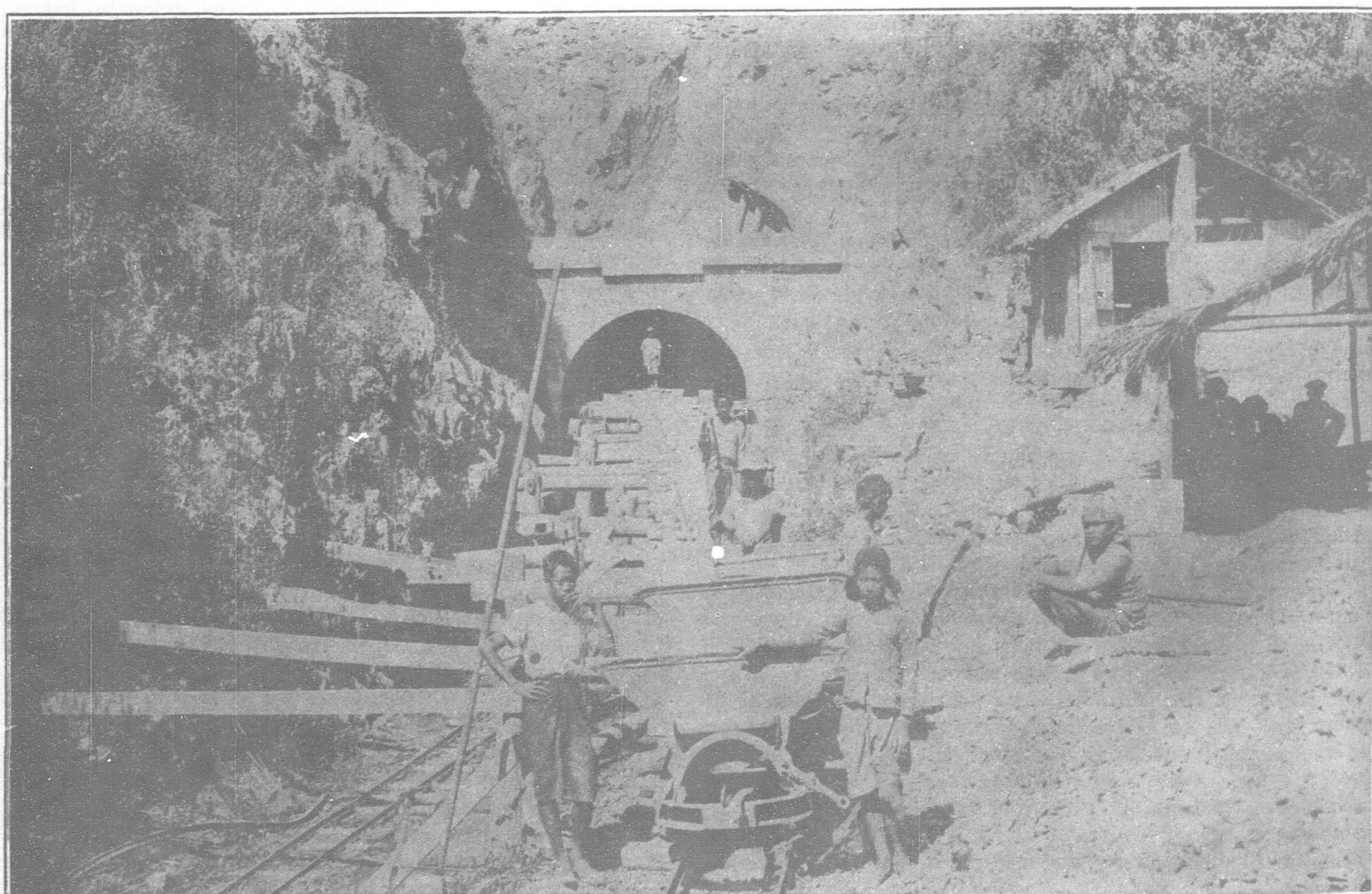
SUMMARY COMPARATIVE STATISTICS.—The following is a summary of comparative statistics of the state railway lines during the years 1919-1920 and 1918-1919:—

	1919-1920	1918-1919
Length of State Lines opened Kms.	2,215 Kms.	2,215
Length of Lines under Construction	211 ..	161
Length of Lines under Survey ..	460 ..	Nil
Total length of State Lines opened and sanctioned	2,886 ..	2,376
Total Capital Tcs. 120,824,034	Tcs. 117,019,033	
Average Capital cost per Km. of Open line	54,548 ..	52,830
Gross Earnings...	10,257,942 ..	9,254,189
Working Expenses	4,682,624 ..	5,010,091
Net Receipts	5,575,318 ..	4,244,098
Percentage of Working Expenses to Gross Receipts ...	45.65%	54.14%
Percentge of Net Receipts to Capital after deducting Renovation Fund ...	4.11%	3.13%

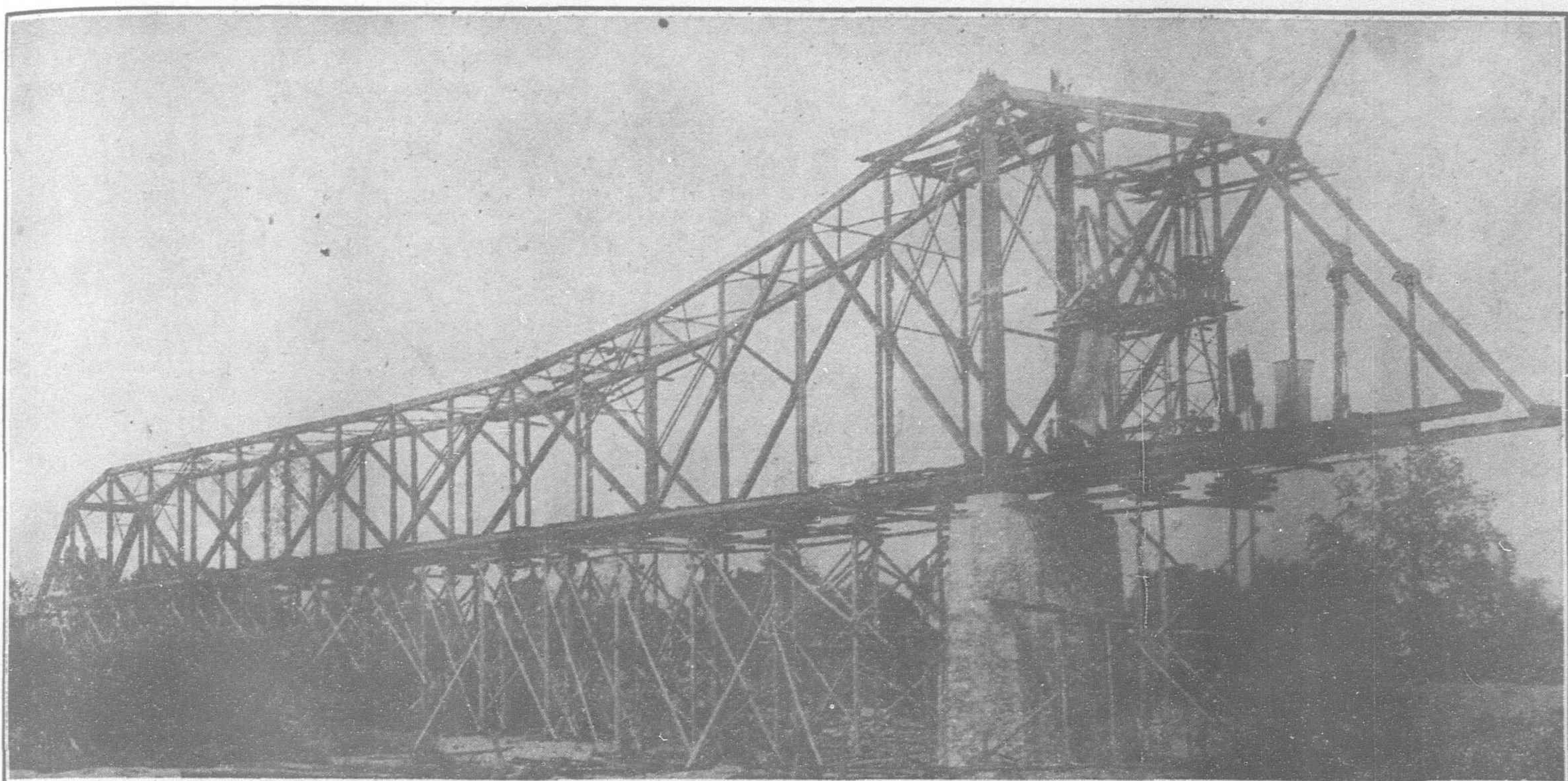
BUILDING NEW SIAMESE STATE RAILWAYS



Bridge of 40 m. span at Km. 420.1 of the Northern Line under Construction



The Pass Tunnel at Km. 426 of the Northern Line under Construction



The Bridge over the Mehnam at Km. 366 of the Northern Line under Construction

	1919-1920	1918-1919
Total Train Kilometres	... Kms. 3,244,023	Kms. 3,353,595
Traffic Receipt per day	... Tcs. 28,104	Tcs. 25,354
Traffic Receipt per Km. of Open Line	... " 4,631	" 4,178
Traffic Receipt per train-km.	" 3.16	" 2.76
Running cost per train-km.	" 1.44	" 1.49

	1919-1920	1918-1919
Total number of Passengers	5,332,186	4,646,290
Total Goods carried ... Tons	586,179 Tons	606,759
Head of Live-stock carried ... Head	185,856 Head	207,216
Number of Passengers per train kilometre ...	1.64	1.39
Average fare paid ... Tcs.	1.14 Tcs.	1.12
Average distance travelled ... Kms.	46.26 Kms.	48.23
Tons of Goods per train-km. Tons	0.18 Tons	0.18



The Bridge over the Mehnam at Km. 366 of the Northern Line under Construction. This bridge has a span of 80+100+80 metres

Financial and Traffic Report

(a) *Standard Gauge*.—Total length of line opened to traffic at the end of the year was 950.5 kilometres.

The capital account at the end of the year amounted to a total of Tcs. 60,334,444 distributed as follows:—

1. Korat Line, Bangkok—Korat	... 264.1	Kms. Tcs. 17,673,189
2. Eastern Line, Bangkok—Petriew...	63.4	" " 3,424,333
3. Northern Line, Ban Phaji—Pang Yang	... " 587.6	" " 34,466,181
4. Sawankaloke Line, Ban Dara Sa- wankaloke	... " 28.9	" " 816,581
5. River Line, Makasan—River Station	6.5	" " 614,150
6. Extensions and Improvements	...	" " 3,291,885
7. Various Surveys	... " "	" " 48,125
Total Tcs. 60,334,444		

The capital account during the year was increased by Tcs. 162,345

The average cost per km. of all lines to date ... Tcs. 63,443

FINANCIAL STATEMENTS.—The gross earnings amounted to Tcs. 6,331,353 as against Tcs. 5,884,813 for the previous year. This represents an increase of Tcs. 446,550 and is principally due to the large number of passengers carried. The gross working expenses amounted to Tcs. 2,581,890 as against Tcs. 3,000,218 for the previous year. This decrease, amounting to the appreciable sum of Tcs. 418,326, is principally due to the reduction of expenditure on new works and the decrease in the cost of maintenance, the latter being much reduced from the large expenditure of the previous year.



Siding at the Mehnam for the Supply of Sand Ballast at Km. 340 of the Northern Line, Royal Siamese Railways

The net dividend earned after deducting contribution to renovation fund is 5.71 per cent. compared with 4.29 per cent. for the previous year.

Increase in Receipts	... ... ... ...	7.59%
Decrease in Working Expenses	... ...	13.94%
Percentage of Working Expenses to Gross Receipts		40.78%

WORKING RESULTS.—The working results for the year in comparison with the previous year are as follow:—

	1919-1920	1918-1919	Increase + Decrease—	
	Ticals	Ticals	Ticals	
Gross Receipts, ...	6,331,353	5,884,803	+ 446,550	
Working Expenses	2,581,890	3,000,218	— 418,328	
Net Receipts	3,749,463	2,884,585	+ 864,878	
Renovation Fund	301,672	300,860	+ 812	
Net Profit	3,447,791	2,583,725	+ 864,066	
<i>(b) Metre Gauge.</i> —Total of line opened to traffic at the end of the year was 1,264 kilometres.				
The capital account at the end of the year amounted to a total of Tcs. 60,489,590 distributed as follows:—				
1. Bangkok Noi to Petchaburi	151 Kms. Tcs. 8,241,174			
2. Petchaburi to Ootapao	776 „ „ 36,968,903			
3. Branch Lines, Trang, Nakon Srithammaraj and Singora	156 „ „ 6,924,294			
4. Ootapao to Balaw	136 „ „ 5,440,000			
5. Haad Yai to Padang Besar	45 „ „ 2,866,433			
6. New Works executed in year 2,462 but included in Construction Account for 2,463	„ „ 48,786			
<hr/> Total Tcs. 60,489,590				

NOTE—Accounts 2 to 5 are not yet finally closed.

The Capital Account during the year was increased by Tcs. 3,642,656 The Average cost per Kilometre of all lines to date is Tcs. 47,856

FINANCIAL STATEMENT.—The gross earnings amounted to Tcs. 3,926,581 as against Tcs. 3,369,386 for the previous year, an increase of Tcs. 557,203. This increase is mainly due to the larger number of passengers carried to an extent of about 12.6 per cent. over the previous year.

The gross working expenses amounted to Tcs. 2,100,734 as against Tcs. 2,009,873 for the previous year, an increase of Tcs. 90,861. This increase is partly due to the augmentation in the value of materials used in the mechanical service for repairs of locomotives and wagons and also high price of fuel.

The net dividend earned after deducting contribution to renovation fund is 2.52 per cent. compared with 1.89 per cent. showing an increase of 0.63 per cent. over the previous year.

Increase in Receipts	... ... ... ...	16.54%
Increase in Working Expenditure	... ...	4.52%
Percentage of Working Expenses to Gross Receipts		53.50%

WORKING RESULTS.—The working results for the year in comparison with the previous year are as follow:—

	1919-1920	1918-1919	Increase + Decrease—	
	Ticals	Ticals	Ticals	
Gross Receipts, ...	3,926,589	3,369,386	+ 557,203	
Working Expenses	2,100,734	2,009,873	+ 90,861	
Net Receipts	1,825,855	1,359,513	+ 466,342	
Renovation Fund	302,448	284,235	+ 18,213	
Net Profit	1,523,407	1,075,278	+ 448,129	

Engineering Service, Maintenance of Ways and Works

(a) Standard Gauge: PERMANENT WAY.—Considerable work has been carried out in re-sleepering and maintaining the permanent way, and the following materials have been used:—

Ballast	... ...	... ...	25,439 cbm.
Pitching stone	... ...	... ...	12,903 „
Sleepers	... ...	... ...	94,225 pieces
Rails	... ...	... ...	271 „
Fishplates	... ...	... ...	1,014 „
Fishbolts	... ...	... ...	2,351 „
Bearing plates	... ...	... ...	574 „
Spikes	... ...	... ...	41,353 „
Telegraph posts	... ...	... ...	510 „
Insulators	... ...	... ...	2,176 „

EARTHWORKS.—The earthworks executed for making up embankments and training of rivers amount to 103,837 cbm.

BRIDGES.—All the timber bridges were kept in good repair.

148 corbels, 458 girders, 100 caps and 20 posts having been renewed. A new bridge is being built to replace the old timber one at Km. 205.7 on the northern line. Twenty steel bridges were painted during the year. The river protection work at Ban Dara bridge is practically completed.

STATIONS AND OTHER WORKS.—The station and other buildings have been kept in good repair. A new station building has been erected at Ban Hua Wai, also several minor quarters for subordinate officials. A new eating house has been erected for the workshop men at Makasan. The new station at Klong Plakot was completed also the extension of Koke Kathiem Station. Several siding were extended to cope with the increased traffic. One new semaphore was erected at Ban Mee.

(b) *Metre Gauge* : **PERMANENT WAY.**—The permanent way has been maintained in good order and the following material used in renewals :

Ballast	...	...	...	37,200	cbm.
Pitching stone	...	...	...	3,321	"
Sleepers	...	...	...	45,835	pieces
Rails	...	...	...	351	"
Fish plates	...	...	...	352	"
Fish bolts	...	...	...	1,586	"
Spikes	...	...	...	22,620	"
Telegraph poles	...	...	...	1,548	"
Insulators	...	...	...	2,541	"

The earthwork in repairs to embankments amounted to 57,178 cbm. Several new sidings have been put in.

BRIDGES.—Renewals to timber bridges consisted of 61 sills,

New openings have been constructed as follow :—

Open culverts	2	m.	1
Parabolic	2	"	1
Pipe	0.60	," diam. 4	
do.	0.30	," "	1

BALLAST.—The completing of the ballasting to the full profile has been continued with, 12,380 cbm. have been run out and spread which added to the previous years' supply makes a total of 14,970 cbm.

PERMANENT WAY.—A new firewood siding has been laid at Km. 523.

EXPENDITURE.—The total expenditure since the re-opening of construction amounts to Tcs. 277,440.

NAKON LAMPANG—**CHIENGMAI DIVISION, 114 KMS.**—No further portion of this line has been opened to traffic owing to the non-arrival of two steel viaducts from Europe.

SURVEY AND CLEARING.—These works are completed throughout.

ACQUISITION OF LAND.—Expropriation plans are prepared for the whole of the division and the work of purchasing the land required is in hand.

EARTHWORKS.—All earthworks, with the exception of the Chiengmai station yard and some minor works along the line, such as filling behind bridge abutments, platforms, etc., are completed. The total quantity executed to date amounting to 2,260,424 cbm.

BRIDGES AND OPENINGS.—The steel work for the bridge over the Meh Wang, the non-arrival of which so long delayed the completion of the work, has now been received and the erection of



Bridge of 25+40+25 Metres Span over the Ouaoe Noi River at Km. 314 of the Northern Line

783 posts, 296 caps, 608 corbels and 1,340 girders, making a total of 3,033 pieces. A total of 21 new bridges and 19 small openings have been constructed. 17 steel bridges were painted during the year.

STATIONS AND OTHER WORKS.—Stations and all buildings have been kept in repair and re-painted where necessary. Many new buildings required for traffic extension have been constructed including 5 stations, 12 quarters for officials, 4 rest houses, extension of goods sheds, one new wharf and landing place at Tah Samet, and enlargement of wharf at Kan Tang, etc.

Construction

(a) *Standard Gauge—Northern Line* : **DEN JAYA—NAKON LAMPANG DIVISION, 109 KMS.**—The work of completing this portion of the line has been steadily proceeded with and is now, with the exception of a few rock cuts not yet taken out to their full width, practically completed.

EARTHWORKS.—The quantity of earthwork executed during the year amount to 97,893 cbm. which added to that of the previous year makes a total of 171,736 cbm.

BRIDGES AND OPENINGS.—Extensive protection works have been carried out to prevent scouring at the outlet of openings and at the toe of embankments alongside of rivers, necessitating the use of 6,540 cbm. of pitching stone.

same is nearly completed. The steel work for the viaduct at Km. 589.1 has arrived but we are still awaiting that for the viaducts at Km. 590.3 and Km. 590.7. With the above exceptions all bridge work is completed to the Tah Chumpoo river at Km. 603. This river is being crossed by a ferro concrete bridge of 2 spans of 40 m. each, the foundations for which are in hand and preparations made for erection of the false work. From Km. 603 onwards the bridge work is in hand as far as possible.

PERMANENT WAY.—Platelaying, delayed for some time owing to the non-arrival of rails from America, was resumed on the 15th November, 1919 by the railway battalion of royal engineers and has now reached Km. 651.842, or 14 kms. from Chiengmai.

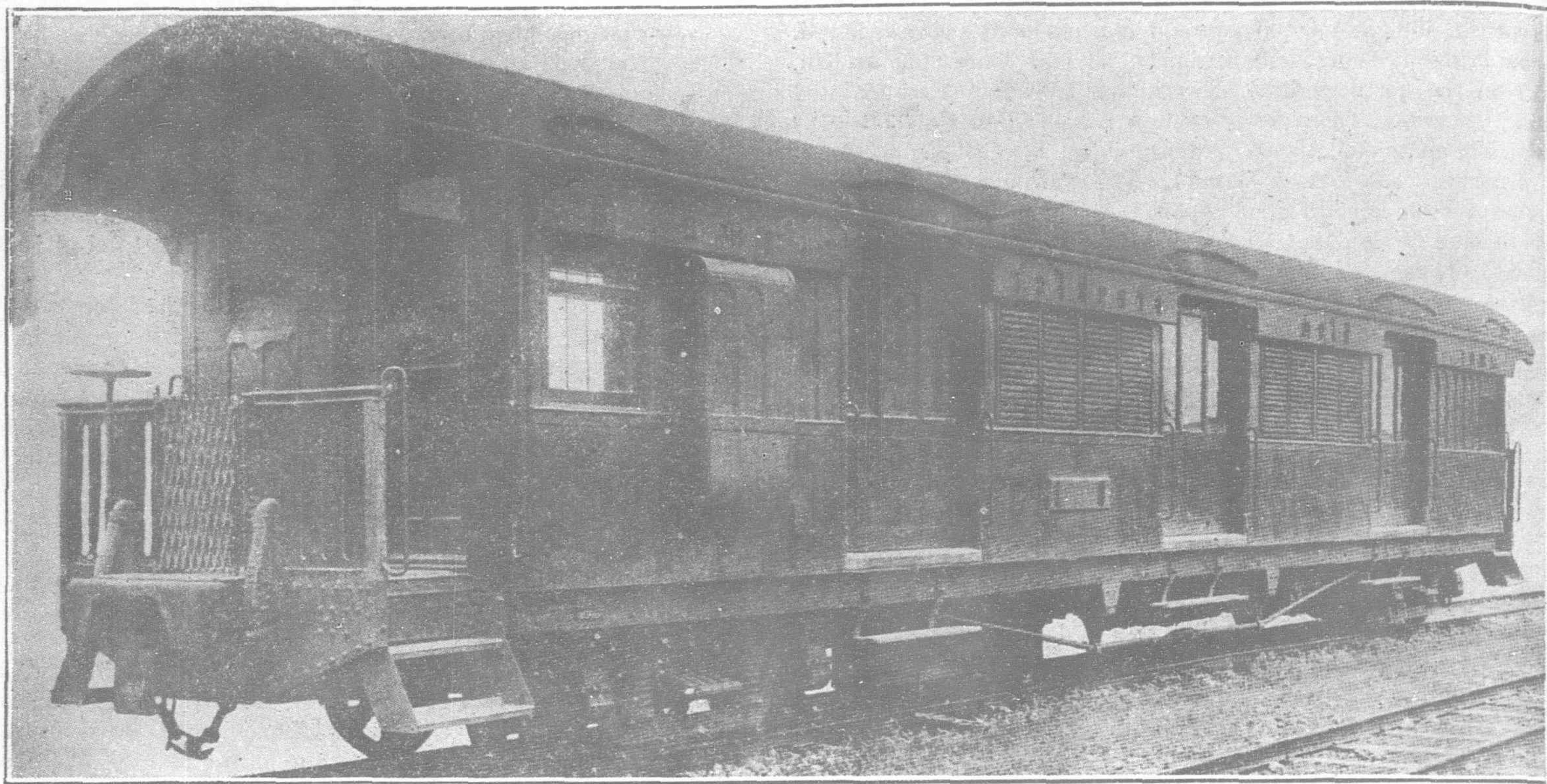
BALLAST.—Ballast run out and spread during the year amounts to 20,664 cbm. making a total to date of 23,687 cbm.

SLEEPERS.—Sleepers to the number of 2,480 and 8 sets of switch sleepers have been purchased during the year which completes the supply required to reach Chiengmai.

TELEGRAPH LINE.—Beyond the purchasing of material required no further extension of the telegraph line north of Pang Yang Km. 587.6 has been carried out. The work will be continued in the near future.

BUILDINGS.—The only building erected during the year has been the maintenance engineer's office at Nakon Lampang.

EXPENDITURE.—The total expenditure to date amounts to Tcs. 7,749,938.



Bogie Van, Siamese State Railways

EASTERN LINE EXTENSION (1 M. GAUGE): PETRIEW-ARANYA PRADESA. LENGTH ABOUT 196 KMS.—ACQUISITION OF LAND.—No work has been done under this head beyond the preparation of plans and particulars of holdings to be taken.

SURVEY.—The survey was commenced in June 1919 and by the end of the current year a trial line over the whole route was completed, as well as 40 kms. of line finally pegged out.

CLEARING.—A total length of 30 kms. have been cleared ready for earthworks.

EARTHWORKS.—A contract was let for 30 kms. of earthwork in January 1920. The work was promptly started and by the end of the year 4 kms. or approximately 38,500 cbm. were completed.

EXPENDITURE.—The expenditure to date amounts to Tcs. 72,006.

NORTH-EASTERN LINE EXTENSION (1 M. GAUGE): NAKON RAJASEMA—UBON. LENGTH ABOUT 310 KMS.—ACQUISITION OF LAND.—Plans and particulars are prepared for the first 20 kms. and a few transactions have been completed.

SURVEY.—The survey was commenced in January 1920 and up to date 20 kms. have been finally pegged out as well as some 35 kms. of trial lines.

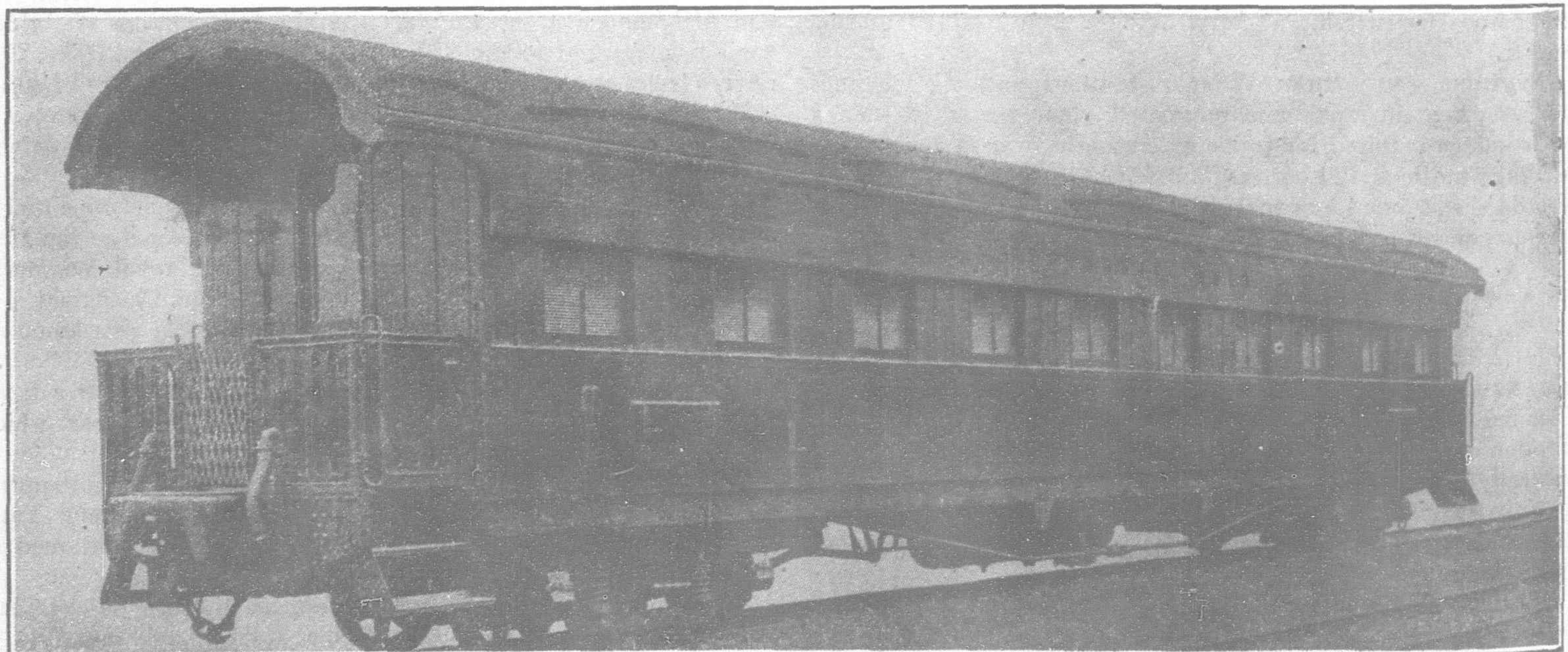
CLEARING.—Clearing is completed for a length of 4 kms.

EARTHWORKS.—A contract has been let for 20 kms. of earthwork, of this 2 kms. or approximately 14,500 cbm. have been completed.

EXPENDITURE.—The expenditure to date amounts to Tcs. 15,968.

(b) Metre Gauge—Southern Line: PETCHABURI-OOTAPAO, 776 kms.—With the exception of additional quarters required from time to time or other works for dealing with the extensions of the traffic, this district is completed. A sum of Tcs. 3,346,609 has been expended during the year, made up as follows:—

Locos and rolling stock	...	...	...	Tcs. 2,627,126
Administration Building	...	...	...	„ 135,106
Workshop machinery, stores, etc.	....	...	„	393,388
New Stations, sidings, bridges and quarters			„	190,989



Bogie Third Class Carriage, Siamese State Railways

The total expenditure amounts to Tcs. 36,968,903 and is included in Statement A.

OOTAPAO-SUNGEI GOLOK, 219 KMS. SURVEY AND ACQUISITION. The survey, acquisition of land and clearing have been practically all finished.

EARTHWORKS.—The earthworks, with the exception of a few station grounds, and sundry small work is completed. A quantity of 436,480 cbm. has been executed during the year, making a total quantity to date of 4,812,518 cbm.

BRIDGES AND OPENINGS.—All culverts and small openings are completed or in hand with the exception of 19 yet to be started. All abutments and piers for steel bridges are completed or in hand, and awaiting the steel work. This commenced to arrive at the end of the year and it is expected that regular delivery will now take place and the work of erection, already started, will go steadily onwards. Timber bridges are completed throughout.

PERMANENT WAY.—The laying of permanent way is completed to the Golok river. Ballasting is in hand and is being pushed as fast as the supply of stone permits. Considerable difficulty was experienced in obtaining sleepers for this district and most of them have had to be brought from the Tung Song and Chumpon districts. Total quantity of sleepers purchased was 318,115. Total quantity of ballast paid for was 173,056 cbm.

TELEGRAPH LINE.—The telegraph line is under construction.

STATIONS.—All station buildings with two exceptions are completed, total number being 22. Office quarters and other buildings nearly completed throughout.

GENERAL.—No further section of this district was opened to regular traffic during the year, traffic trains run to Klong Sai where they pick up passengers and light goods brought by construction trains from the south. Total length of line open to traffic was 98 kms. The total expenditure to the end of the year amounted to Tcs. 9,945,103 and is included in Statement A.

HAAD YAI-PADANG BESAR, 45 KMS.—This section is opened to traffic and is completed with the exception of some steel work for bridges. This material arrived at the end of the year and the erection is in hand. Several official quarters and some other minor works have been executed during the year. The total expenditure to end of the year amounts to Tcs. 2,866,432 and is included in Statement A.

BRANCH LINES.—A sum of Tcs. 22,585 has been spent on these lines during the year principally on bridge openings. Making a total amount to date of Tcs. 6,924,293 as shown in Statement B.

BANGKOK NOI TERMINUS.—A sum of Tcs. 16,838 has been spent on this work during the year principally on expropriation and roads. Total expenditure to date Tcs. 411,956.

Mechanical Service

(a) *Running Service: LOCOMOTIVES.*—During the period under review no new locomotives were added to the stock which remained the same as at the end of the previous year, namely: 62 standard gauge and 37 metre gauge locomotives. Of the 25 4-6-0 locomotives on order with the North British Locomotive Co., Ltd. of Glasgow for the metre gauge lines 7 were delivered and in course of erection at the end of the year. The remaining 18 locomotives are expected to arrive in June, 1921. No further orders for locomotives have been placed during the year. The work of constructing the railway to the north and to the south continued to absorb a considerable number of the locomotives, but these engines are of little or no value for work on the open line. The two locomotives on hire from the Federated Malay States railways for construction work were returned during the year. Considerable difficulties were experienced on all lines especially on the southern line due to the increasing traffic and shortage of engines and spare parts but traffic was carried on without reduction of train service.

Particulars of locomotives repaired including repairs to locomotives employed on construction and maintenance service are as follow:

Particulars	Heavy	Medium	Light	Total Repaired	
				1919-20	1918-19
Standard Gauge Engines	14	3	11	28	19
Metre Gauge Engines ...	11	8	2	21	17
	—	—	—	—	—
Total	... 25	11	13	49	36

PASSENGER STOCK.—The following passenger stock for the southern line was on order at the beginning of the year with The Metropolitan Carriage and Wagon and Finance Co., Ltd. of Birmingham, England :—8 bogie first and second-class carriages: 8 bogie vans: and 12 bogie third-class carriages. Delivery of these was commenced and 8 bogie third-class carriages were erected and handed over to traffic service at the end of the year. No further orders were placed for passenger stock during the year. The work on converting 5 standard gauge bogie third-class and van carriages to bogie vans was completed during the year.

The number of carriages repaired during the year was as follows:—

Particulars	Heavy	Medium	Light	Total Repaired	
				1919-20	1918-19
Standard Gauge Carriages	6	70	76	152	144
Metre Gauge Carriages ...	42	8	31	81	96
	—	—	—	—	—
Total	... 48	98	107	233	240

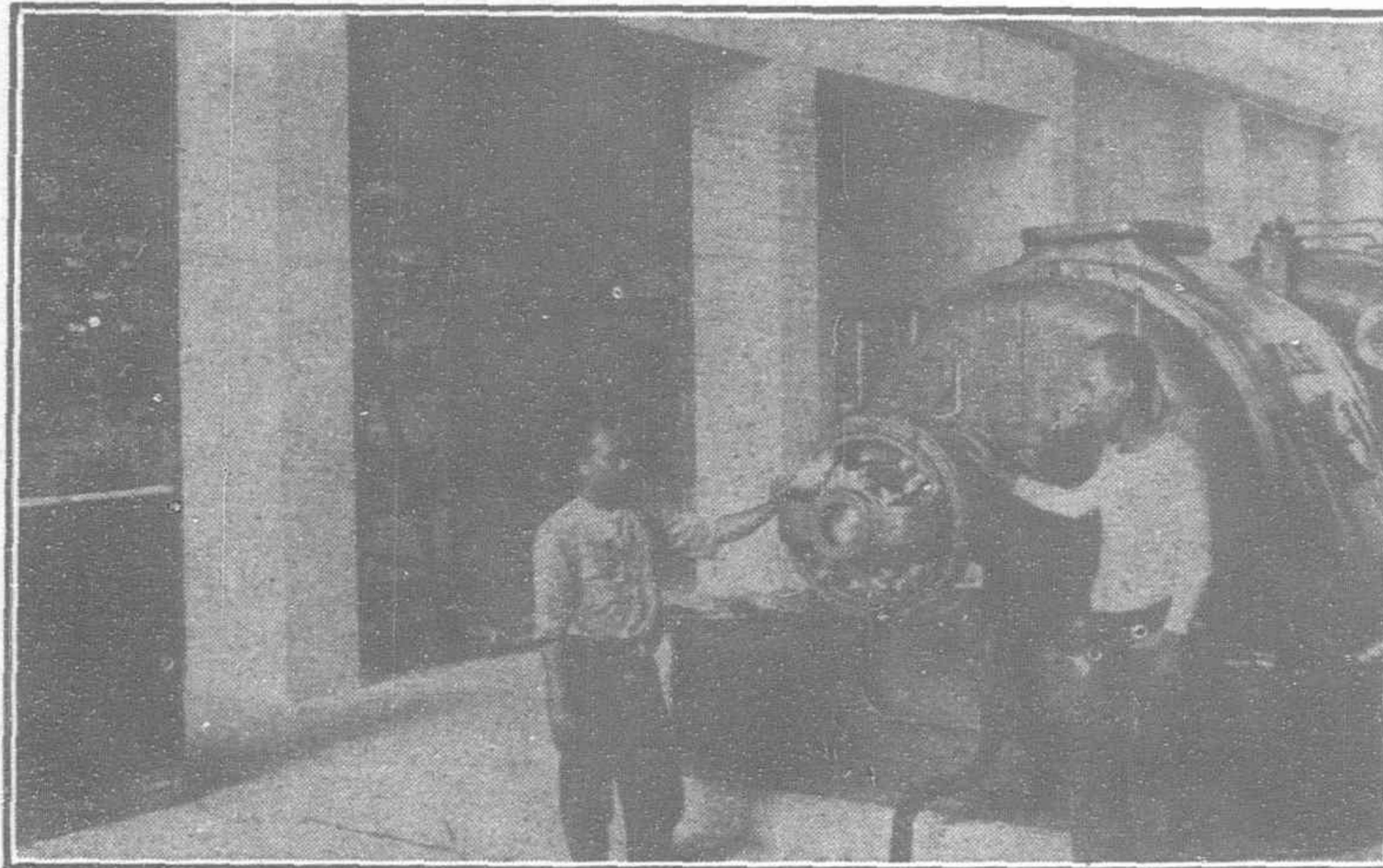
FREIGHT STOCK.—The following material was on order at the beginning of the year :—Underframes and steelwork for 200 metre gauge covered freight wagons for the southern line with the Metropolitan Carriage and Wagon and Finance Co., Ltd. Underframes and steelwork for 100 cattle wagons and 20 goods brakevans also for the southern line with The Midland Railway Carriage and Wagon Co., Ltd. of Birmingham, England.

The 200 covered goods wagons were delivered towards the end of the year and construction of the bodies is in good progress. Six metre gauge bogie rail trucks for the southern line on order with Messrs. Baume et Marpent, Belgium, prior to the outbreak of the war, but not delivered due to the German occupation of Belgium were delivered at the end of the year and are at present in course of erection, one of these was handed over to traffic service before March 31. There are also 200 metre gauge low-sided wagons on order with Messrs. Baume et Marpent. This was a pre-war order not completed and has now been renewed. The delivery of these is expected during the year B.E. 2463. The wagons are to be used for the construction of the eastern and north-eastern lines extensions. No further orders for freight stock were placed during the year. One standard gauge covered freight wagon was damaged beyond repairs during a derailment on the northern line and has been struck off the list of rolling stock. Twelve standard gauge timber trucks were converted to low-sided wagons during the year. Five metre gauge low-sided wagons were converted to cattle wagons during the year.

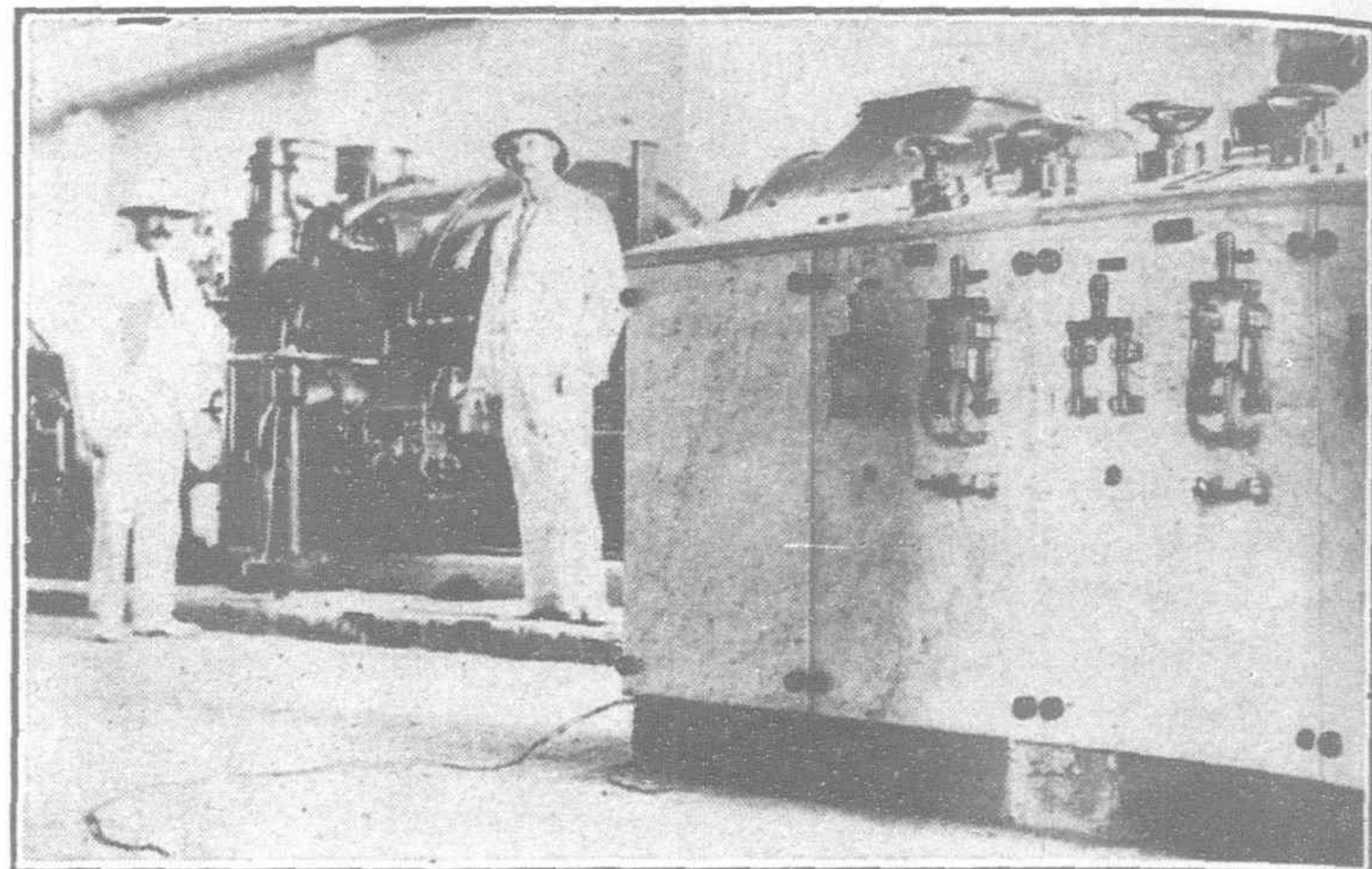
Workshops.—A considerable amount of modern workshop machinery was ordered and the new wood-working machinery was erected during the year. The new electric traverser outside the carriage and wagon shop at Makasan was completed and put into use at the beginning of the year. With the new organisation and additional supervision provided for and the new machinery purchased it is hoped that the output will increase accordingly. A scheme for extending and altering Makasan workshops to serve all lines is under consideration, now that the linking up of the state railway lines on the east and west banks of the Menam Chao Phya has been decided upon.

(c) *Transport Service: MOTOR LORRIES.*—The number of motor lorries in possession of the department remained the same as for 1918-1919.

LAUNCHES AND RIVER CRAFT.—One motor launch has been bought this year for use on the eastern line extension. The fleet of launches and other river craft at the close of the year was as follows:—3 steam launches, 5 motor launches, 1 house-boat, and 5 lighters.



High Tension Switch Board and Turbo-Generator



Exciter Bench Board and Turbine No. 3

Bangkok Municipal Electric Power Station

THE power station for the city of Bangkok is built entirely of brick and reinforced concrete and measures 121 by 135 feet. It is divided into compartments for furnace, boiler, turbines and switches, accumulators, etc.

Owing to the abundance and cheapness of paddy husk as compared with coal and wood, this by-product of rice milling is used as fuel for power houses in Bangkok wherever possible. In order to insure a minimum of manual labor in conveying the bulky paddy husk to the furnace, a system of conveyers was installed as a part of the plant of the power station, the principle being an electrically-driven Archimedian screw revolving in a steel casing. An 80-foot teak wharf was built to receive the paddy husk from the boats and to receive the lower end of the first conveyer, while the upper end is anchored to the end wall of the husk house.

The method adopted in feeding the boiler furnaces from the bunkers consists of a simple arrangement of mechanically controlled shutters, whereby the husk may be readily regulated as the demands for steam arise. The husk store is a building 164 feet long and 66 feet wide, constructed of concrete pillars and brick walls between. The capacity of this store is equivalent to one month's requirements of paddy husk, while the bunkers hold a quantity sufficient for two weeks' demands at full load.

Babcock & Wilcox boilers have been installed. There are 16 steam drums, together comprising four batteries of boilers, each independent of the other. While paddy husk is the primary fuel, liquid fuel, coal, or firewood can also be used. Liquid fuel will also

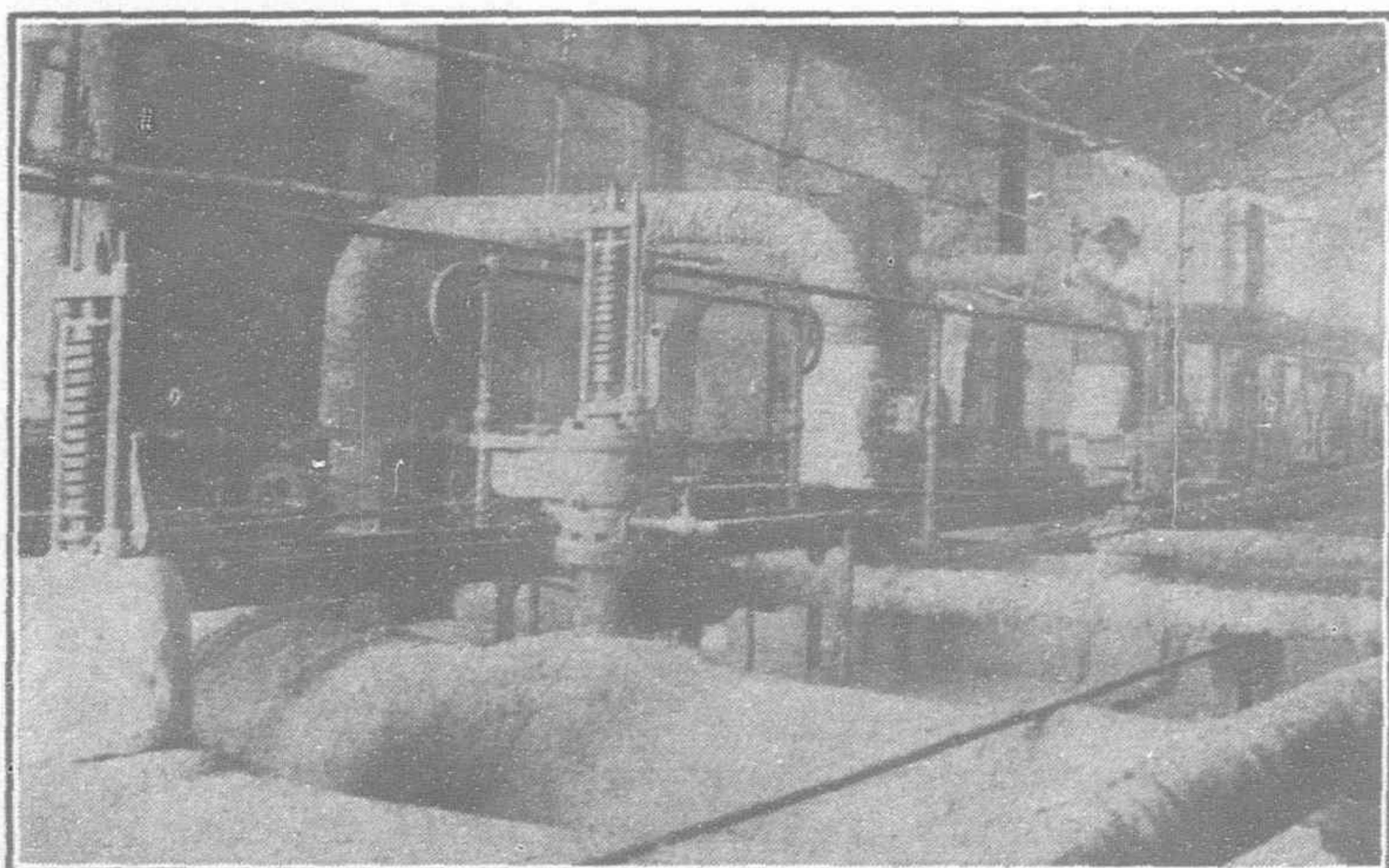
be stored overhead, but only for use in the event of paddy husk giving out.

Superheated steam will be used entirely for the steam turbines, the boiler pressure being 200 pounds to the square inch. They have been tested up to 400 pounds. The heating surface of each battery of boilers is 6,480 square feet, while the heating surface of the superheater is 1,980 square feet. One boiler will always be kept for liquid fuel. The chimney in connection with the boilers is of steel, and one of the highest in Bangkok, being 162 feet from ground level and 8 feet in diameter.

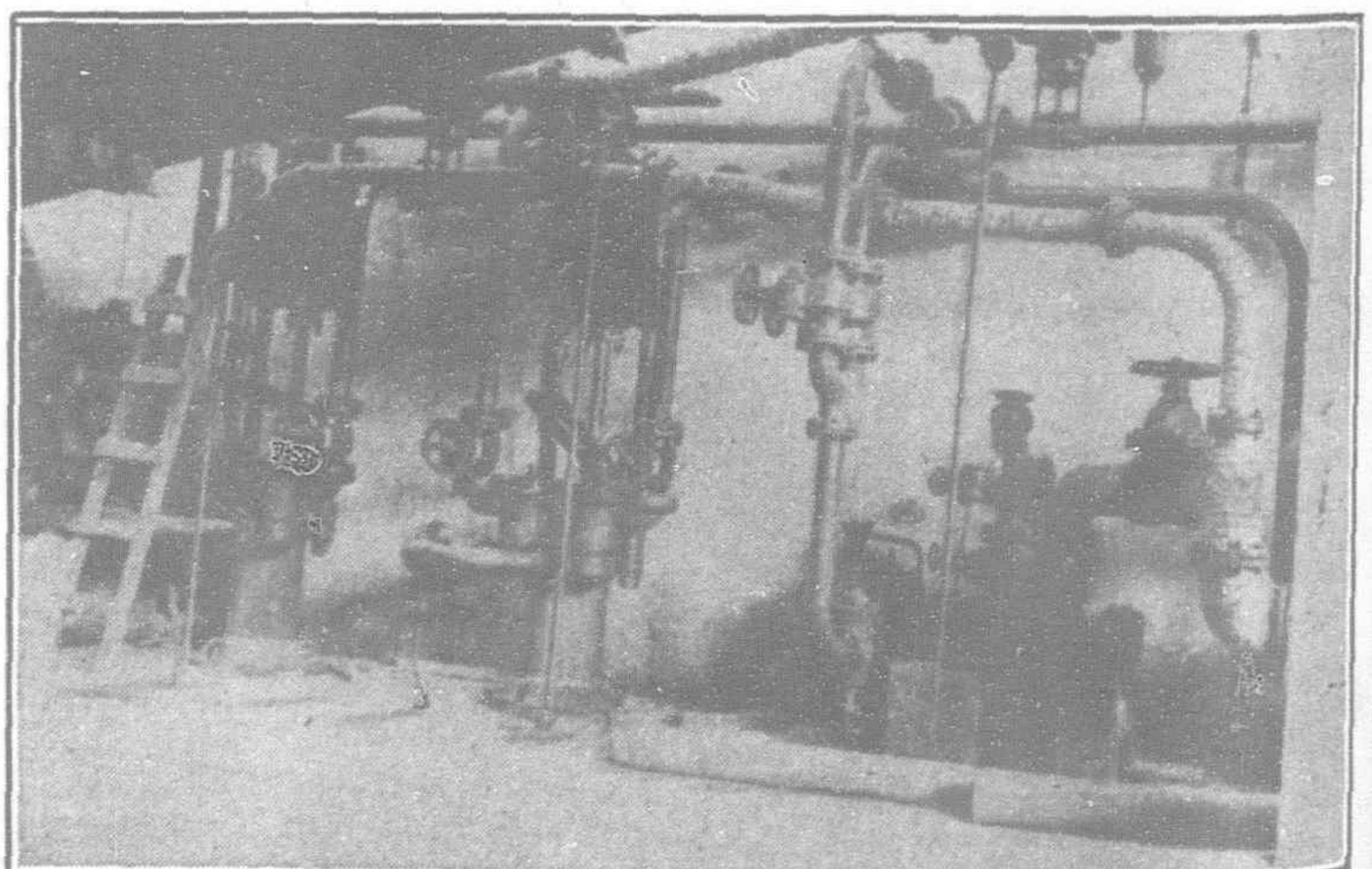
One object aimed at in designing the station was to have one bank of boilers, one turbine, and one condenser complete, so that if the station were divided into three sections each would work independently of the other. The parts of each section are interchangeable, thus rendering it necessary to keep only one set of spare parts.

There are three 1,000-kilowatt turbines of the multi-stage Curtis type. The plant includes the latest type of boiler-feed pump driven by a small Curtis turbine and capable of delivering water against a boiler pressure of 300 pounds to the square inch. The condenser room, under the three turbines, is below the river level. The pumps here are driven by a small steam turbine.

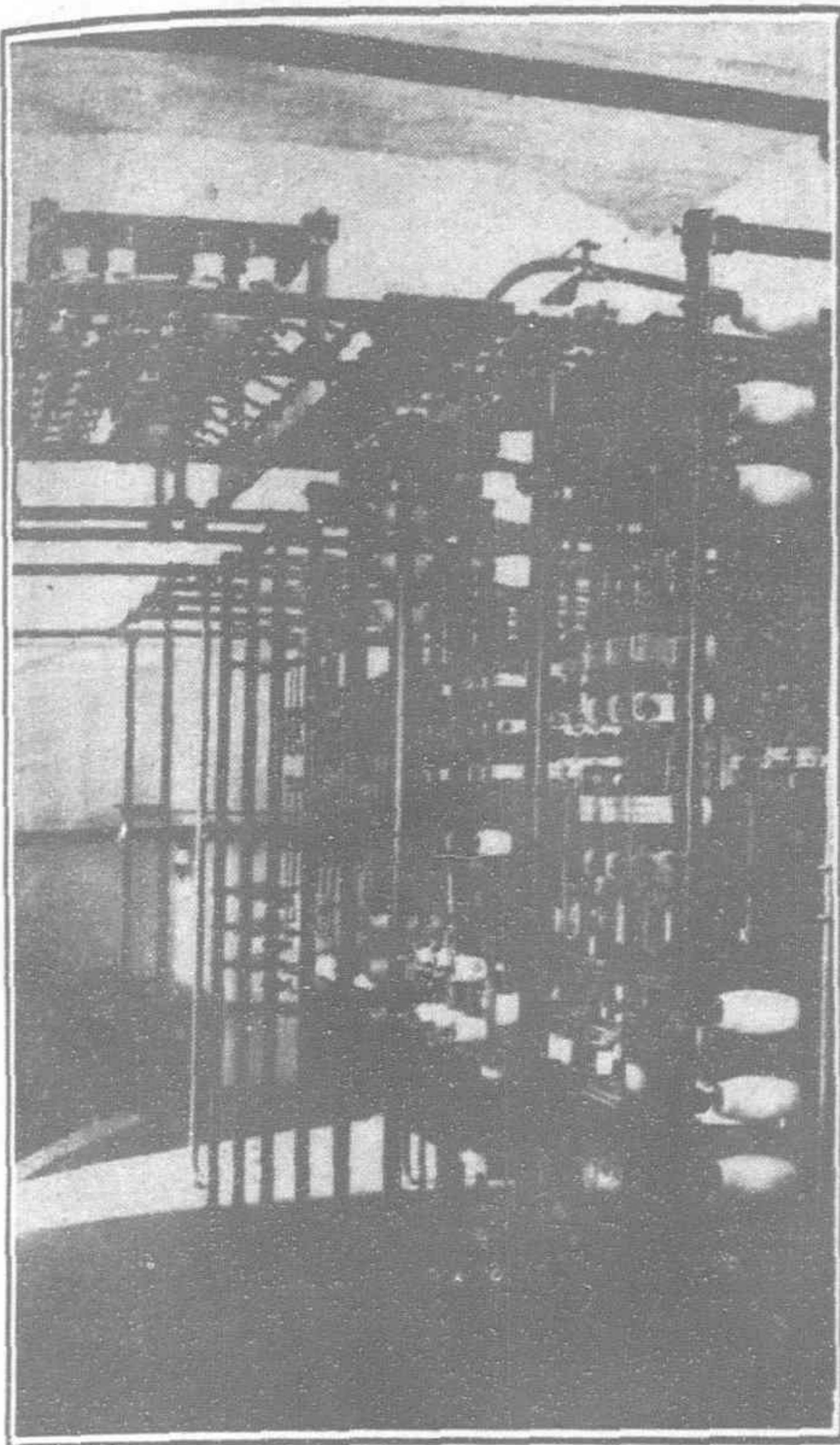
The switchboard is largely automatic in action, and includes an automatic device for regulating the voltage and keeping it steady. The high-tension gear (3,500 volts) is enclosed in a brick room at the back of the switchboard. All the switches which operate the current are of the latest oil-immersed pattern with remote control.



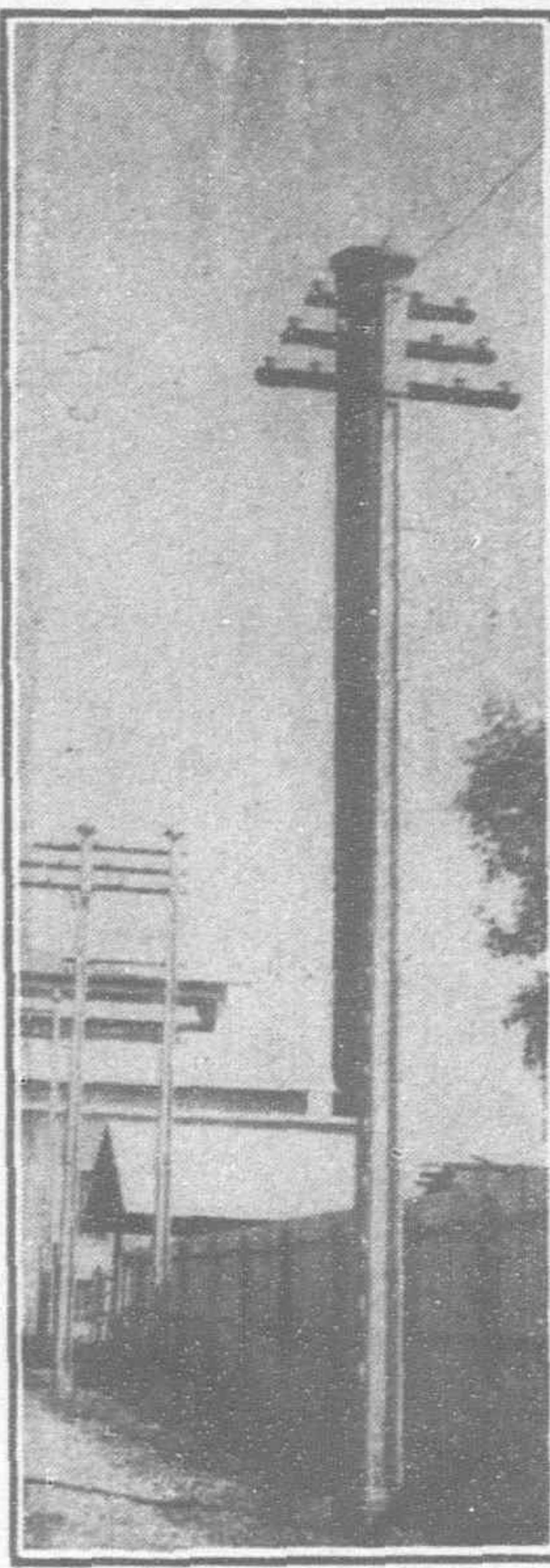
Top of Boilers



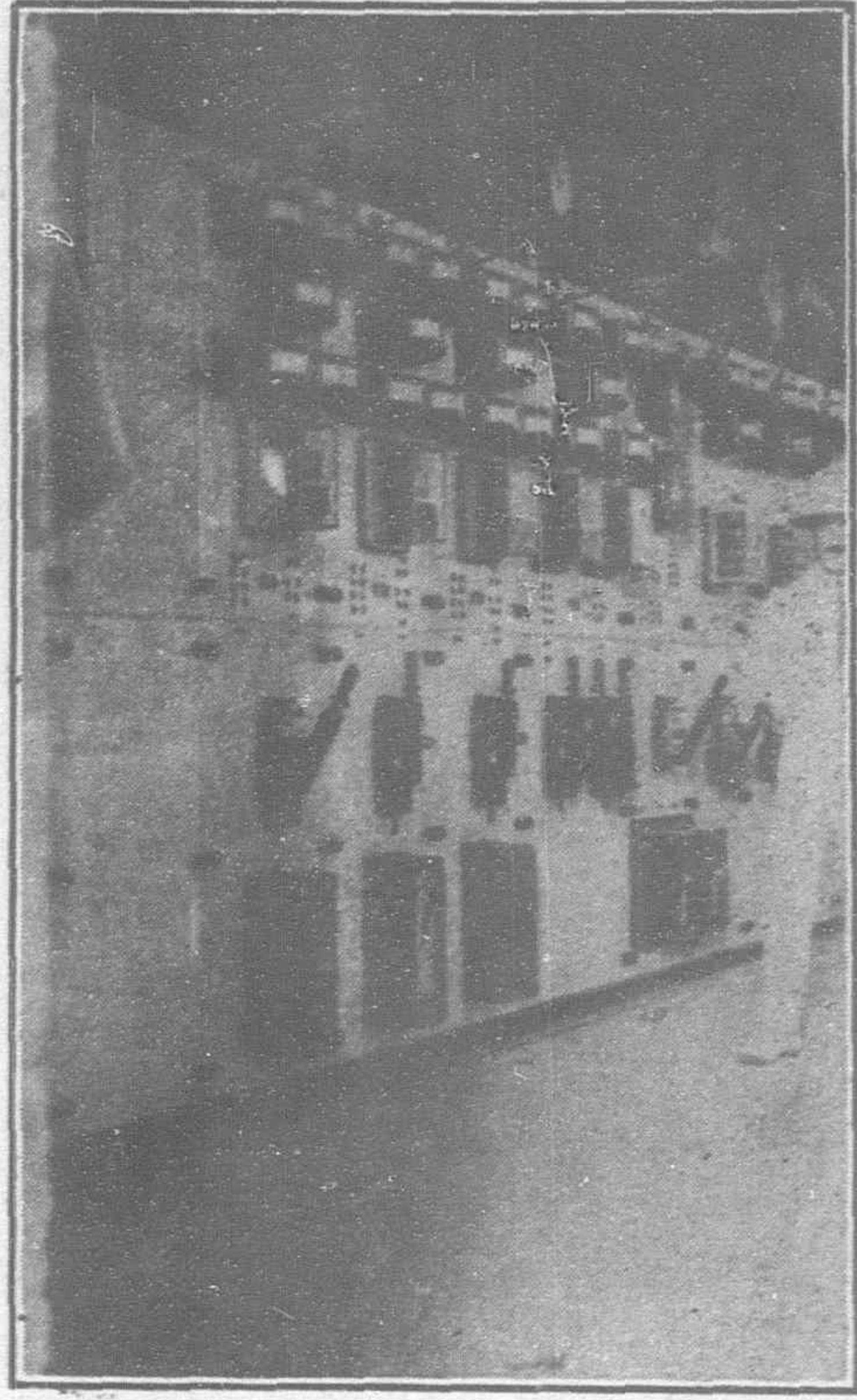
Motor Driven Weir Feed Pumps



Back of High Tension Switch Board



Pole Line leading from Station



High Tension Switch Board

Each of the three turbines and the motor generator is controlled by a separate panel in the switchboard.

A feature of the switchboard is the lightning resistors, which relieve the very high pressure caused by a flash of lightning striking the overhead wires and thus protect the generators from damage. Each generator has an instrument for registering the number of units, so that the output of the station may be calculated exactly,

and also for indicating any leakage and on what part of the line. A large Tudor battery has been installed with a capacity of 2,600 amperes in 5 hours. There are 110 cells in the battery.

This station provides lighting for a large area occupied by royal palaces and residences for Siamese nobles. The motive power for operating the machinery of the Bangkok waterworks and the opium factory is also supplied by this plant.

New Dairen Colony for Building Contractors' Employees

A new colony is in process of construction at Tanchiatun at the west of the S.M.R. Co. General Laboratory, Fushimidai, Dairen. The first lot of houses having been finished, tenants began removing into them early in December, 1920. Out of altogether 368 houses to be erected, 174 two storeyed and 94 flat dwellings were completed. This colony, when founded, is to be automatic, though unofficially, and is to provide itself with sanitary, fire-extinguishing, and night patrolling arrangements. It may be mentioned that, out of the total capital of Y.2,000,000 of the Shotokukai, a society organized for the benefit of employees of the local building contractors, Y.1,500,000 has been laid out during the current year. Each tenant is entitled to the ownership of the dwelling he occupies in the course of ten years and is required to pay as monthly instalment the respective amounts of Y.68, Y.39, and Y.31 for a two-storeyed dwelling and flat dwellings of Class A and Class B. A hospital and an apprentice school are also under project. Everything possible will be done to make the colony a model one, especially in social welfare.

are Chinese who have graduated from American and Philippine Colleges.

Mr. Paul N. S. Lee, associate superintendent, visited Shanghai for the purpose of establishing an agency for the company and to investigate the market conditions relative to the timber demands. He will probably also tender a bid for the immediate needs of the Tientsin-Pukow Railway.

The saw mill of the company is equipped with modern machinery and has a daily capacity for 60,000 to 80,000 board feet. There is a railway lighting power plant, an ice plant and motion picture theatre for the employees.

Chinese Probing Chinese Trade Conditions

For the purpose of ascertaining the real commercial conditions of the whole country, the general chamber of commerce, Peking, has established a commercial investigation department and in addition to the appointment of special delegates for proceeding to the various provincial capitals and big cities as investigators, the chamber has wired to the various chambers of commerce throughout the country as follows:—

(1) The general Chinese commercial situation towards domestic as well as foreign firms; (2) the special products of the province and cities; (3) the peculiar condition of every trade and how it can be developed; (4) what is the condition of foreign commerce and how it affects Chinese; (5) the latest condition of foreign and native commerce and what reforms can be introduced for the development of Chinese trade; (6) the financial condition of the commerce, foreign and native and what weights and measures are in use locally.

CHINESE GET PHILIPPINE TIMBER CONCESSION.—A timber concession of 60 square miles, located 200 miles south of Manila, has been granted to a group of Chinese capitalists who have formed the Philippine Lumber Company. The concession has a thirty years supply of tropical hardwood trees and is accessible by rail and water.

The company is controlled by Chinese capital and the managers

Public Works in Formosa

FORMOSA, up to the time of its occupation by Japan, was in a very backward state. The materials used for all buildings were clay, stones, bristle, etc., which besides not possessing lasting qualities, were hardly suitable to the erection of public buildings, and were an easy prey for the white ants, a pest that abounded in Formosa, but is absent from Japan. It is not easy to describe the inconvenience of communication and transportation. The construction of streets and bridges had been left in the hands of the inhabitants of the well-to-do class, the government only occasionally bearing a small part of this expenditure.

The market streets were narrow and muddy and gave forth a bad odor, which was a menace to the public health. The waters of the canals and streams were filthy and muddy, and as the climate of Formosa for the greater part of the year is tropical, the state of the canals was a source of plague and disease.

The rivers and streams of the island run down from the mountains in all directions, so that when heavy rains fell fields and plantations were flooded and a great deal of damage

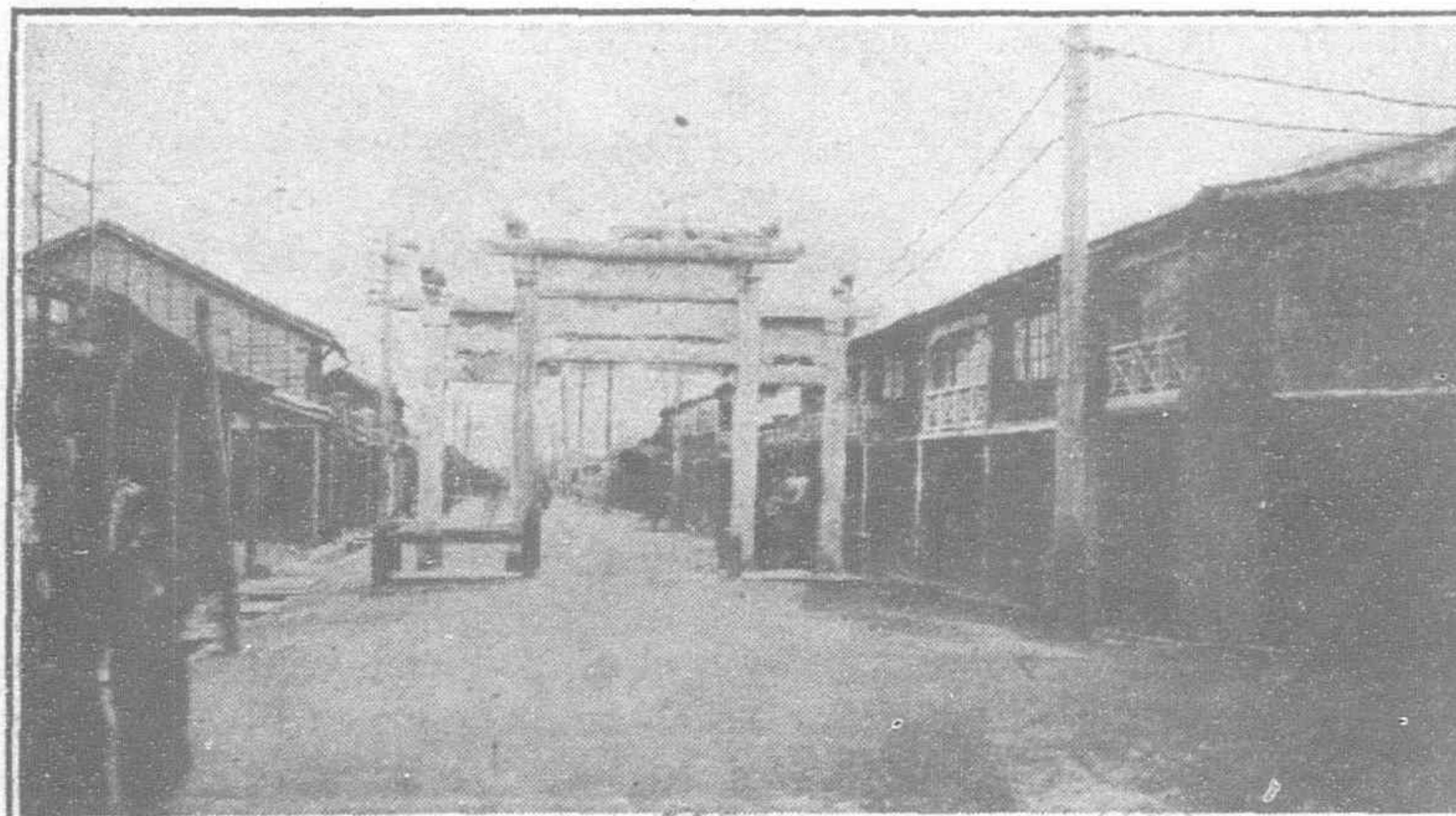
general's court and the Taihoku hospital.

The old court was built when the island was under the control of the Manchu Dynasty. It had been in existence so long that most parts of it were decayed, the white ants having got a firm hold. It was necessary, therefore, to rebuild, and being the highest court in the island an imposing scheme of architecture and the cost of same had to be carefully considered, also the tropical climate had to be taken into account, and the fact that hurricanes frequently occur during the summer and autumn. Iron and cement combined were considered to be the best materials. Wood, though much cheaper, was not proof against the white ants unless a certain acid preventing decay was absorbed in it. The new court is an imposing structure five stories high. It is built of iron, cement, roof-tile and stones, and occupies an area of 75,600 sq. ft. (Japanese measure). A sum of Yen 2,500,000 was passed by the House to defray the cost of this building.

Taihoku Hospital.—The planning of a hospital requires great care at any time. Formosa is located in the tropical zone of Asia—the ground is



Typical Formosan Man and Woman



As it was

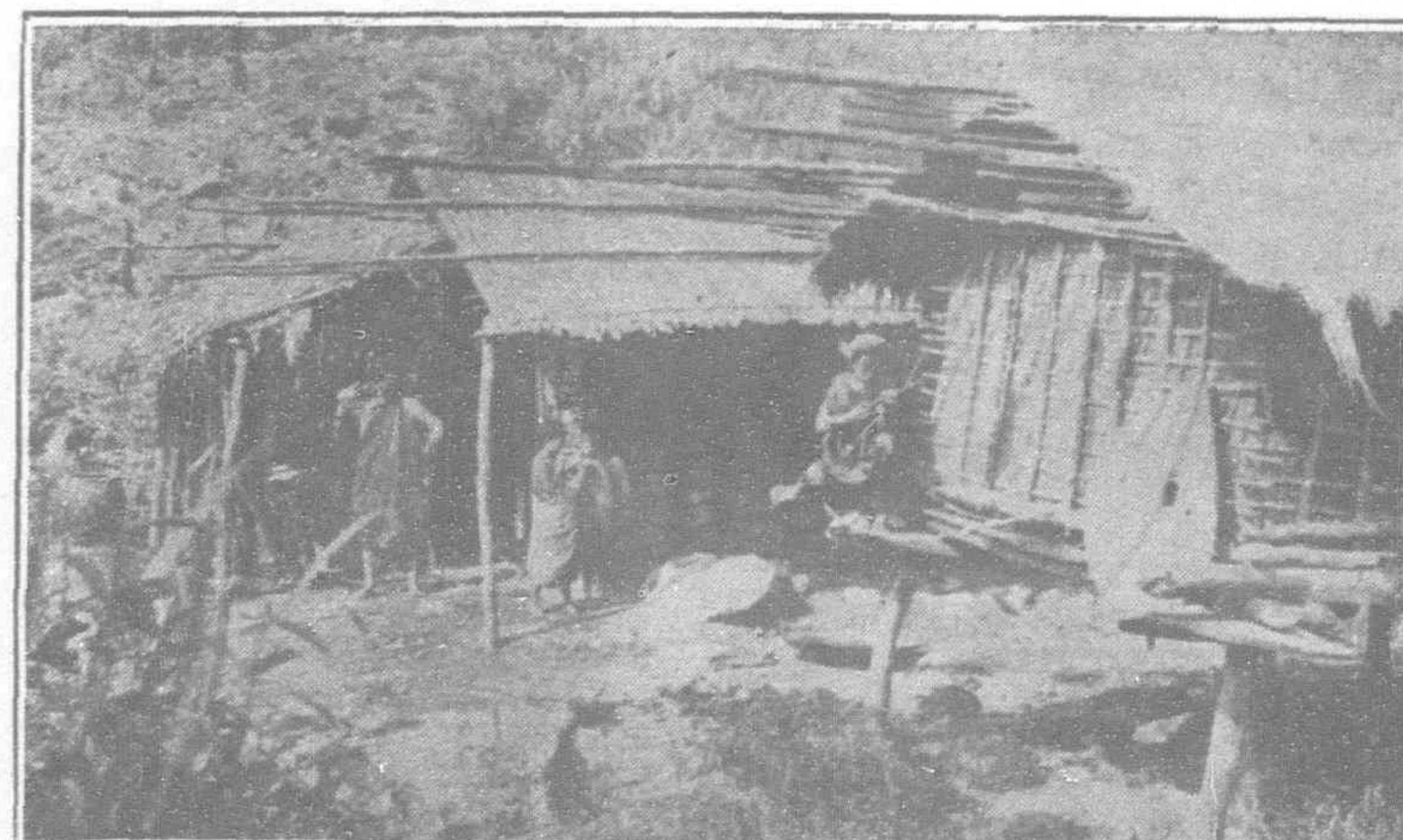


As it is

done. The Japanese took the matter up at once and an Irrigation Investigation Commission was appointed, and a sum of about Yen 100,000 set aside for its expenses. The question of irrigation is a very important one as there are large areas of land under cultivation. Many reservoirs have been and are still being constructed.

Buildings

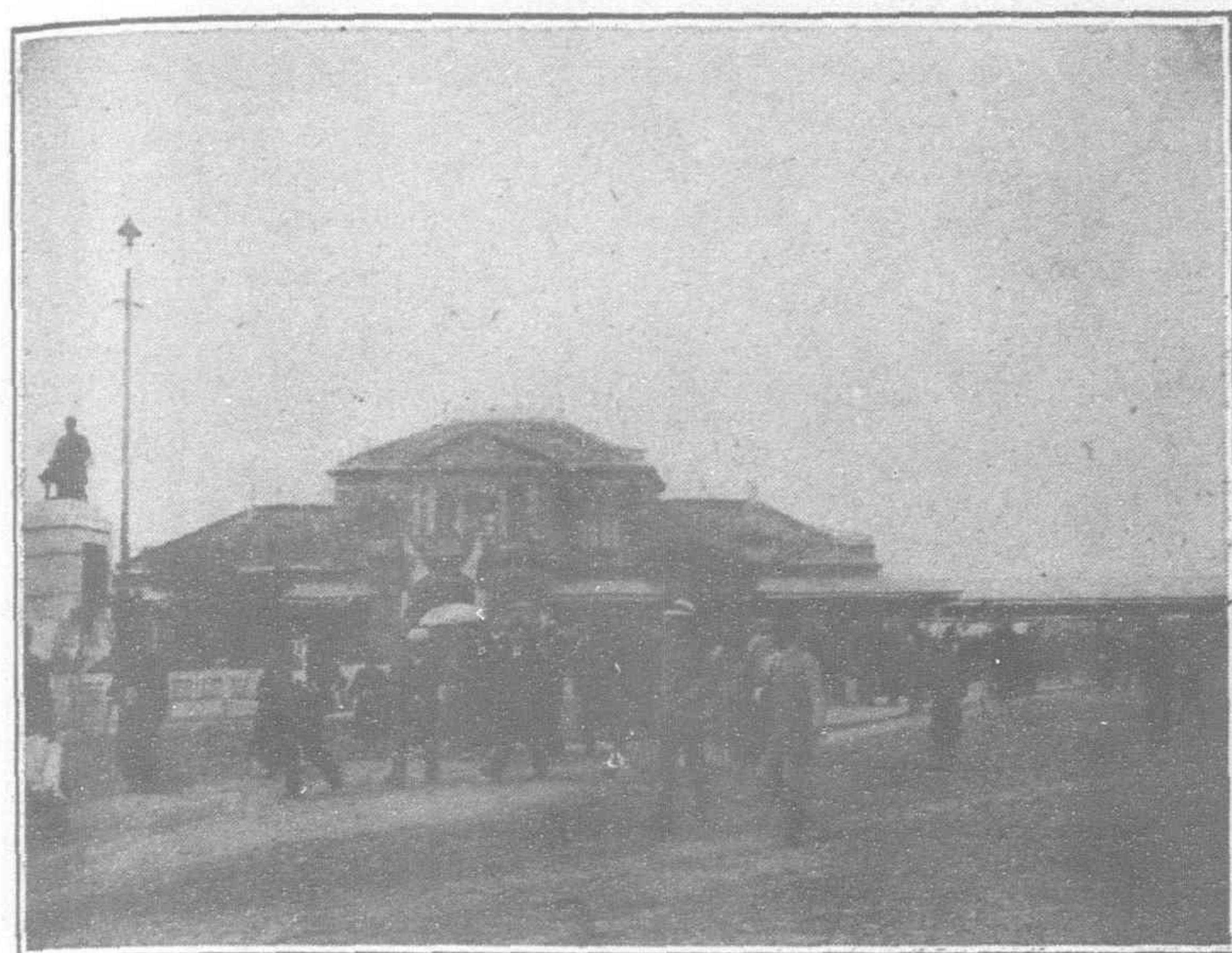
The largest buildings on the island are the governor-



At Home with the Happy Formosan

very damp, and disease common, so that special attention had to be given to the building of the Taihoku hospital. Investigations of hospitals in Hongkong, the Philippines and other British settlements in South China, were made before the plans were drawn up. The building is two stories high and covers an area of about 222,768 sq. ft. (Japanese measure). The dormitory for patients covers an area of 58,320 sq. ft. The cost of this building was Yen 2,420,000.

Types of Japanese Railway Stations in Formosa



The Railway Station of Taihoku



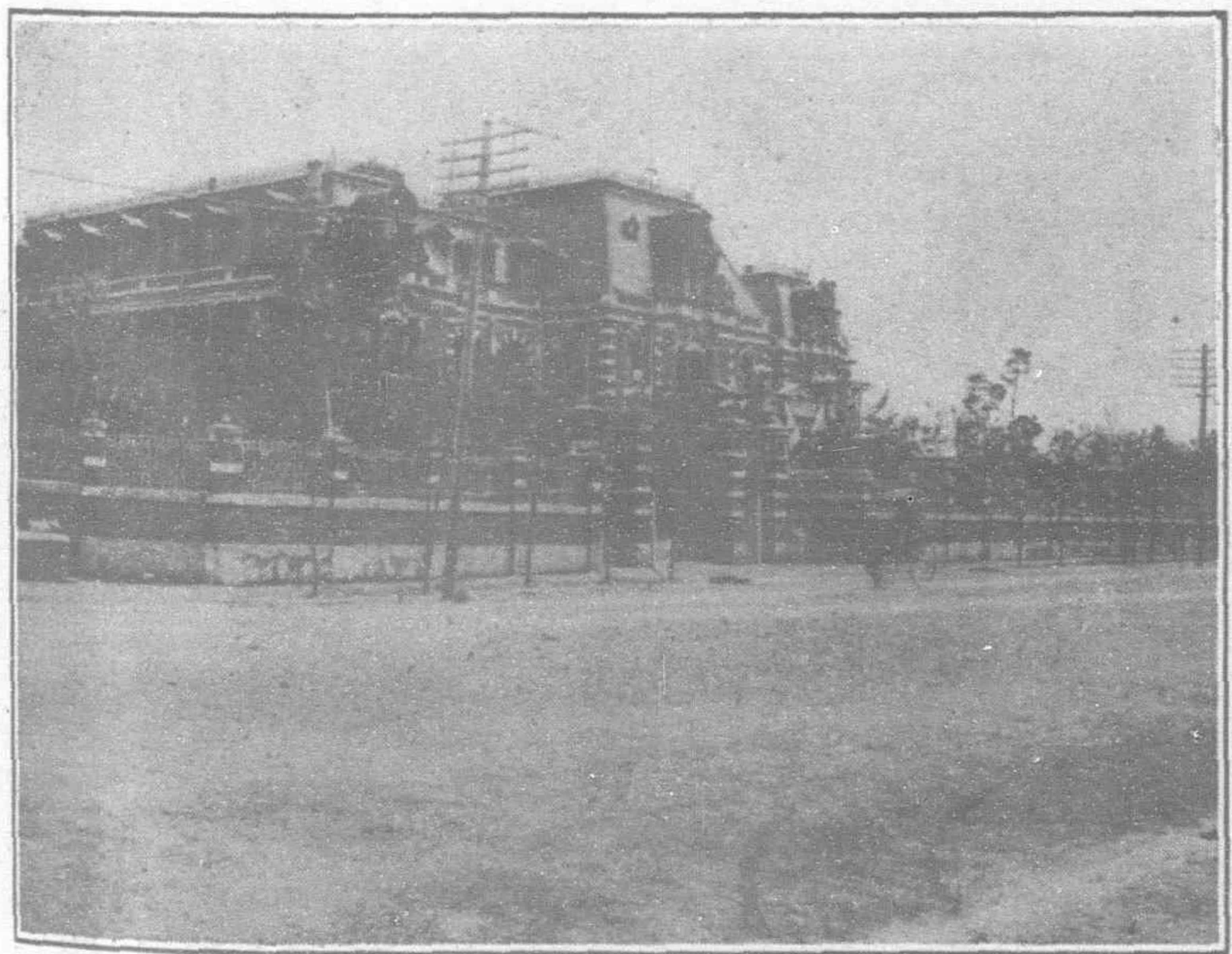
The Railway Station of Keelung



Toen Railway Station



Ako Railway Station



Keewei Railway Station

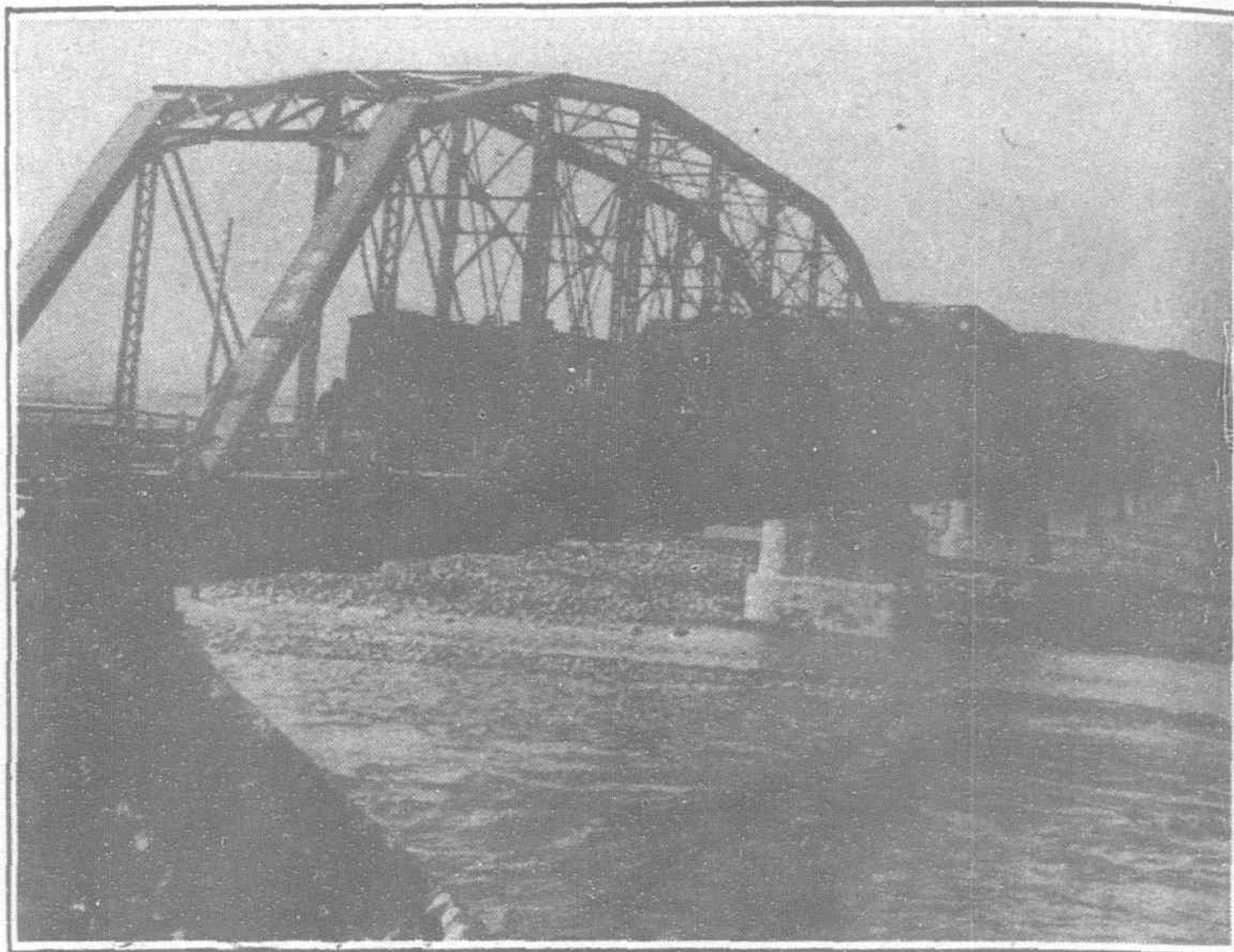


Mau Tsa Railway Station

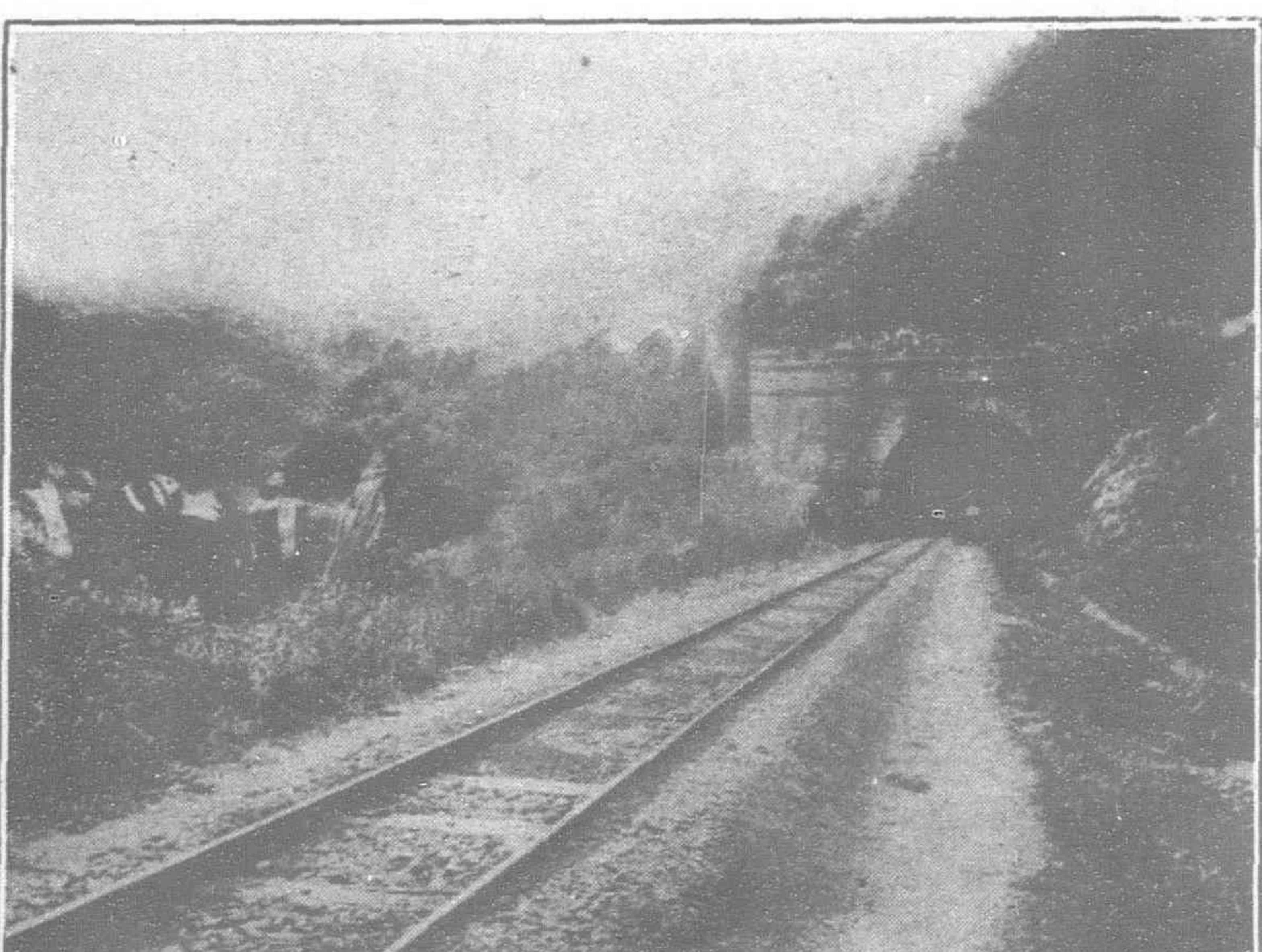
Bridge Works, Dykes and Embankments in Formosa



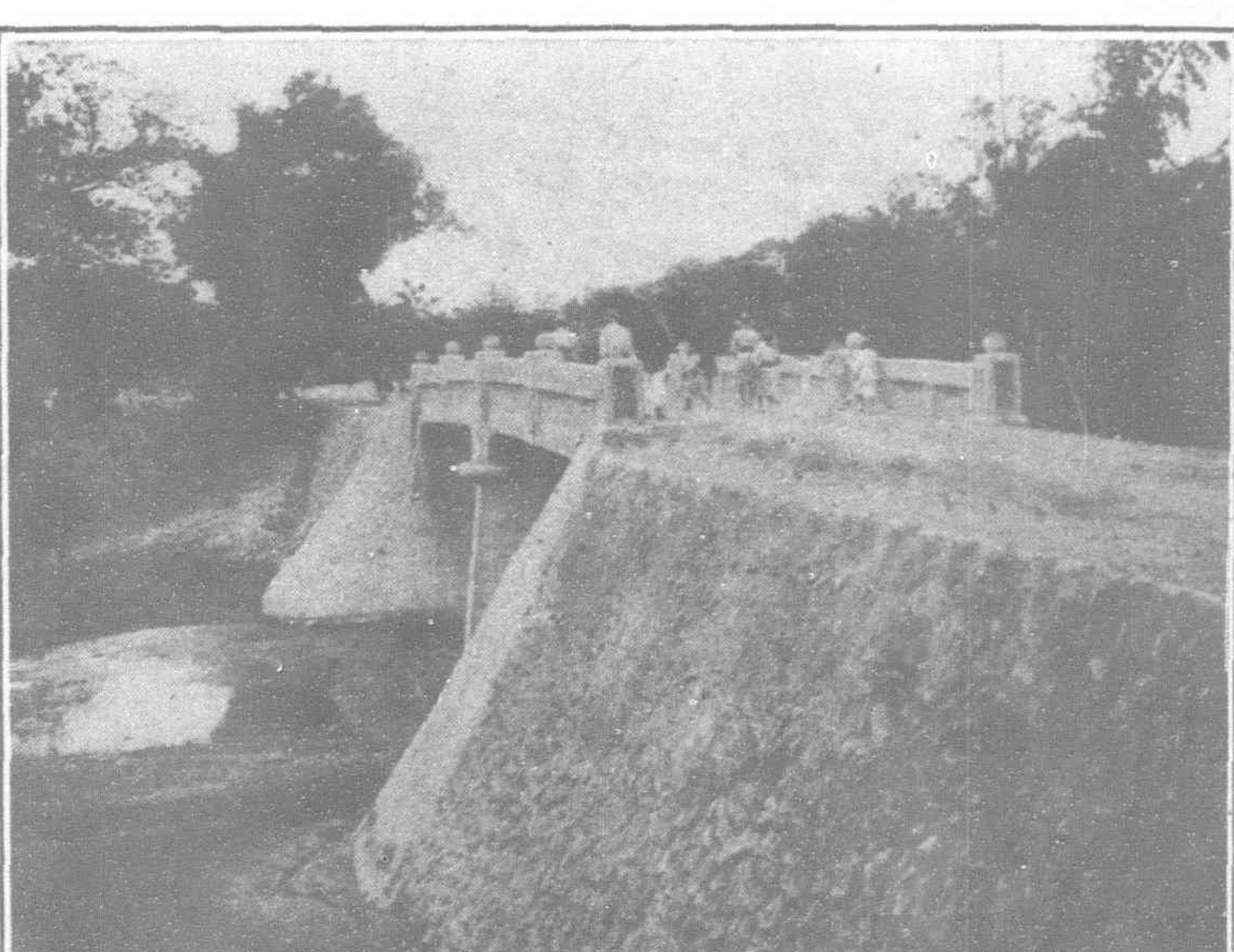
The longest railway bridge on lower Taisan Chi (fresh water), 5,700-ft. in length



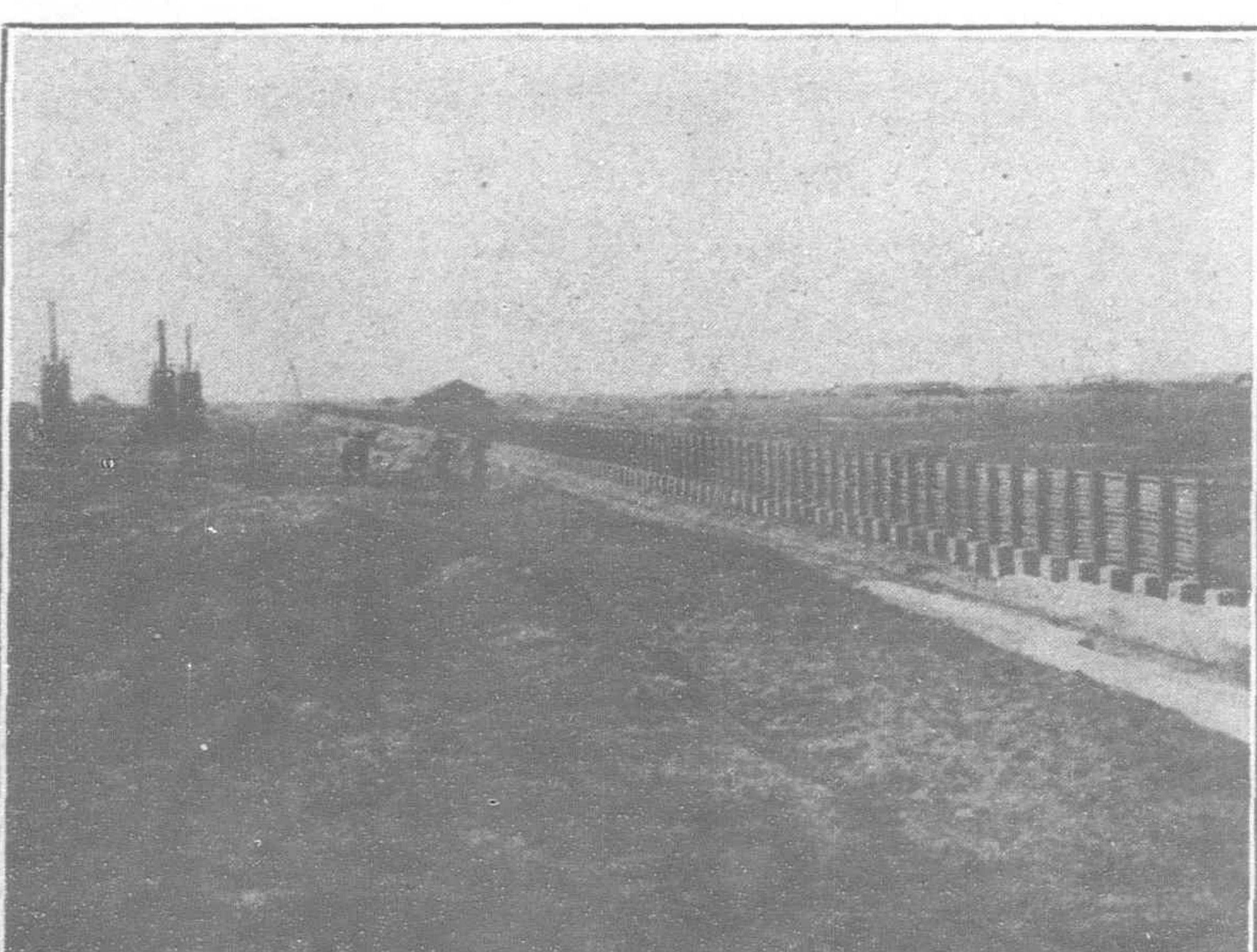
The Bridge of Zon-san Chi



Sung Tsz Liao Ditch



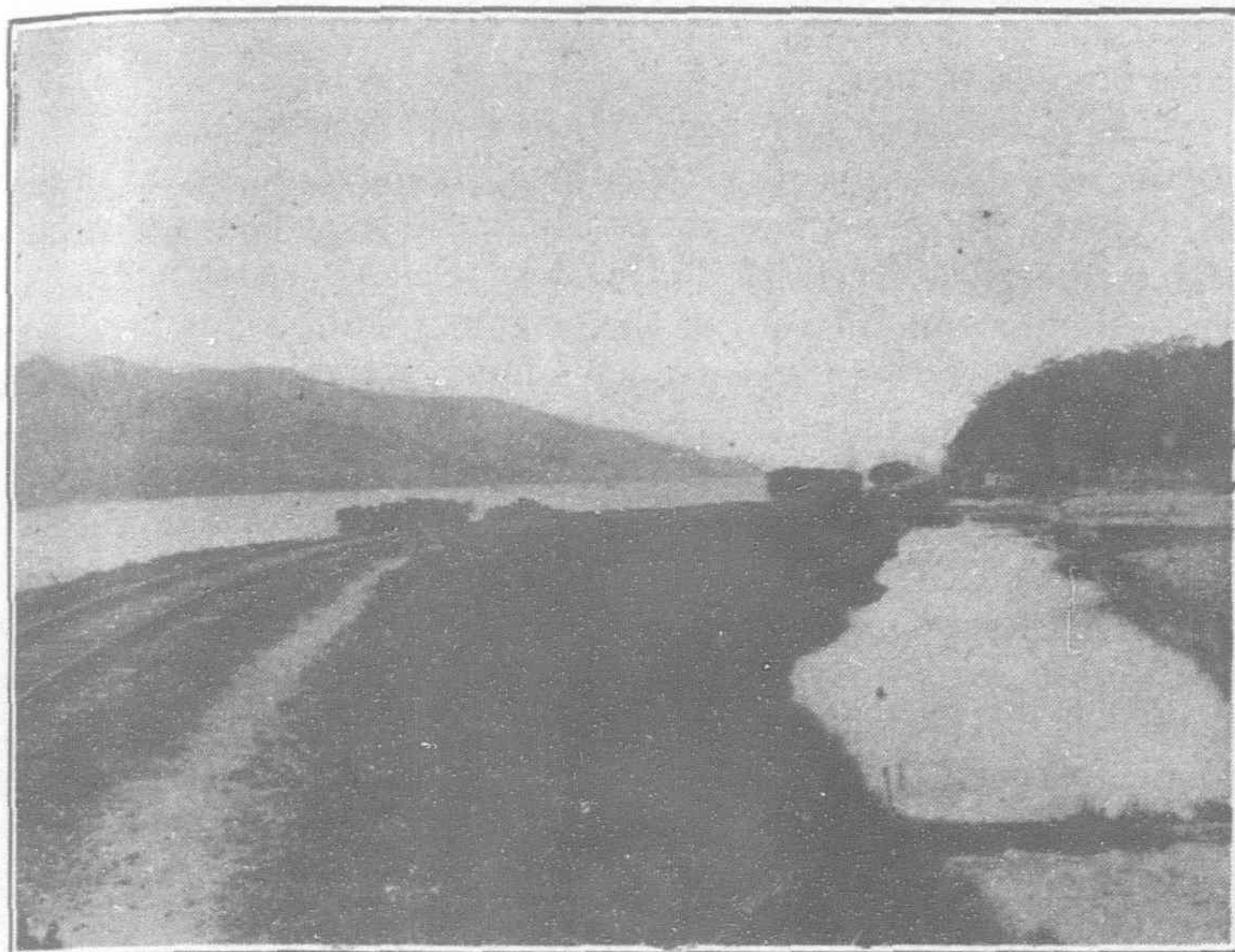
The Bridge of Nan Tsz Hang



Repairing Work of the Dykes along lower Tamsui River



Ta An Che Bridge



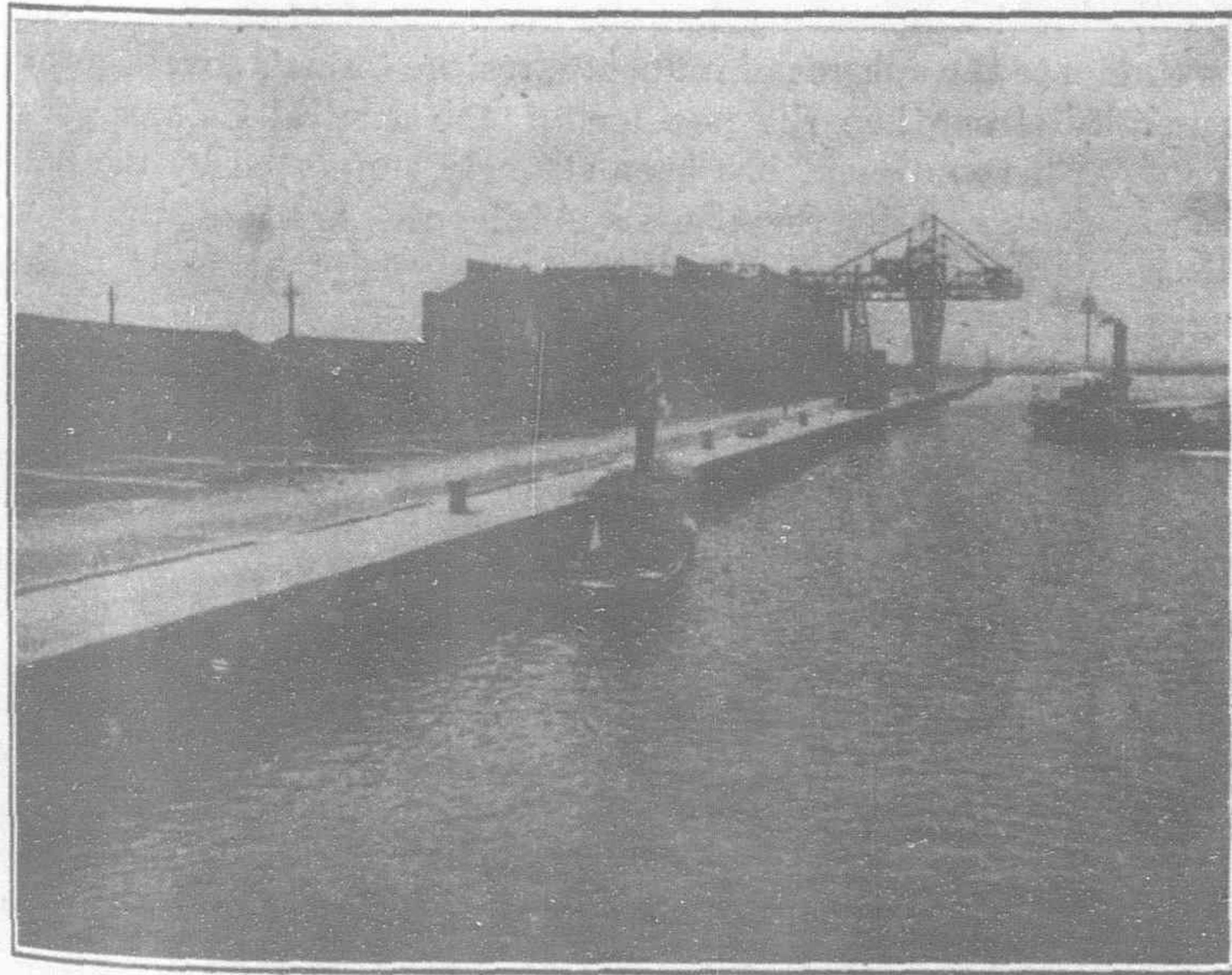
Along the Bank of Taisan

Ports

In the north there are the ports of Keelung and Tamsui, and in the south Takao and An Bink. All engineering works and constructions for Keelung and Takao have been completed according to the original plans. The navigable waters of Tamsui and An Bink are excavated every year so that launches and steam-boats can pass to and fro. There are many ports on the eastern sea, but the coast line is straight, the streams violent, and in the event of heavy rain or storms, communication with the land is broken. No doubt earnest attention will be given to these ports in the near future.

Electric Light

The electric works of the island are divided into two classes—public and private. The public works—Taihoku and Takao—are under the control of the governor-general, and the private works of the sugar factory and gold mine, under the control of their own engineers. The latter is used solely for the purpose of giving power to the machines and the necessary lighting. There are other private works on the island but their scope is limited.



The Bank of Takao River

The Coal Industry in Japan

THE deposits of coal in Japan are estimated at 8,000,000,000 tons, and the output amounted to 31,000,000 tons in 1919. The following table shows the output according to district for some years past in, 000's of tons:—

	Kyushu.	Hokkaido.	Joban.	Yama-guchi	Other.	Total.
1910	12,077	1,590	1,463	465	78	13,681
1913	16,236	2,027	2,176	813	63	21,316
1916	16,712	2,968	2,395	865	62	22,902
1919	21,065	4,363	3,803	1,527	113	31,221

Kyushu takes up 70 per cent. of the national output and heads the list, but the increase in percentage of its output has been less than that in other districts of late, which may suggest that the Kyushu industry has already reached its zenith. Coal from the mainland of Japan is not so fine in quality, and moreover, deposits here are placed at only 1,200,000,000 tons. In the Hokkaido, the deposit is placed at 3,000,000,000 tons, which forms about 40 per cent. of the national estimated deposit and is nearly equal to that of Kyushu. As Hokkaido coal is good, it is likely that the centre of coal mining in Japan will be removed finally from Kyushu to Hokkaido. The deposit in Karafuto is estimated at 1,400,000,000 tons, in Formosa at 300,000,000 tons, and in Korea at 80,000,000 tons but mines in remote places are not yet worked there. The demand for coal has been greatly on the increase in Japan. The following table shows consumption for different purposes for some years past in, 000's of tons:—

	Bunkers.	Railways.	Salt Making.	Factories & Mines.	Total
1910	3,740	1,335	742	4,786	10,593
1913	4,727	1,786	798	7,614	14,924
1919	5,321	1,993	838	10,426	18,579
1920 (Est)	5,700	3,300	700	13,600	23,300

The demand has been on the decrease since the adverse turn of trade, but no over supply was seen at first, as the output was diminished at the same time. Latterly, the demand has further decreased, causing the price to decline. This has resulted in the closing of many mines and in a falling off as follows:—

	Output March.	Output Sept. of Decrease.	Proportion Per. Cent.
Kyushu Coal...	1,650,000 tons	1,320,000	20.0
Hokkaido Coal	346,000	321,000	7.2
Honshu (Mainland) Coal	367,000	305,000	16.8
Total	2,363,000	1,946,000	17.6

Stocks have been rather on the increase, and the holdings in the ports of shipment for some months past may be mentioned as under in, 000's of tons:—

	Ports of Kuyshu.	Ports of Hokkaido	Total
March	782	263	1,045
April	831	283	1,114
May	877	276	1,153
June	1,008	280	1,288
July	1,079	312	1,391
August	1,101	322	1,424
September	1,116	319	1,435

In September, the stock held in Tokyo and Yokohama amounted to 214,000 tons, that of Ise Bay to 114,000 tons, and in Osaka and Kobe to 322,000 tons. The former two figures show a decrease and the last-mentioned an increase. At present first grade lump rules at Y.23 and first grade dust at Y.18. These are thought to be bottom prices.

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, MARCH, 1921.

The Covenant of the League:

"The High Contracting Parties, in order to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war, by the prescription of open, just, and honorable relations between nations, by the firm establishment of the understandings of international law as the actual rule of conduct among governments, and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organized peoples with one another, agree to this Covenant of the League of Nations."—The Preamble of the Covenant.

"The Members of the League undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League. In case of any such aggression or in case of any threat or danger of such aggression the Council shall advise upon the means by which this obligation shall be fulfilled."—Article Ten, styled by President Wilson "the heart of the Covenant."

A Square Deal for China

A Railway Program for the Consortium

"*A CONTRACT is a Contract.*"—This is the basic law of commercial morality. We cannot apply one principle in one part of the world and another in another part. In Paris at the Peace Conference, Great Britain and France insisted upon the inviolability of their contracts with Japan over Shantung. Quite recently, the American and British chambers of commerce in Shanghai invoked the same law, when Chinese merchants were caught in a falling market and endeavored to cancel their orders. Yes, a contract is, and must remain, a contract. Let us extend the application of the fundamental law to China, and see how it affects the consortium and its railway policy.

With the exception of the Siems-Carey and the preliminary Japanese railway agreements, all Chinese railway contracts now pooled in the new consortium were negotiated prior to August, 1914, on pre-war financial terms and conditions, that is to say, five per cent. interest on the loans, four per cent. commission to the bankers and a five per cent. commission on the purchase of materials. There are some variations from these basic terms, such as are found in the Pauling and the French contracts. Conditions have changed. It is now impossible to float the loans on the above terms. If unsupported by diplomatic pressure, the contracts are not worth the paper they are written upon. Many of these contracts were extracted from the Chinese government under severe diplomatic pressure, in some instances under ultimatums. The railway lines were designed by the various powers to delimit spheres of interest, or meet the urgent strategic requirements of the Asiatic military situation. Some were designed to divert the trade of China to ports outside the jurisdiction of the Chinese government, and so build up foreign interests at the expense of the nation which paid the bills. China had nothing whatever to say in the matter. The lines were selected, the terms dictated, and her representatives affixed their signatures on the dotted line. The pendulum has

swung the other way. The contracts cannot be carried out under these original terms.

The consortium has absorbed these old contracts. The object of this combination of international bankers is to strengthen the Central Chinese government, eliminate the spheres of political and commercial interest, and restore China's sovereignty. The consortium is an offshoot of the league of nations, an instrument to give effect to its provisions. We must assume that it is honest and the high ideals underlying its organization are to be carried into effect. We must accept as a basic principle that all the political, strategical and special commercial interests in these old contracts and concessions have disappeared, and they can now be treated as purely business propositions. In other words, the spheres of interest have disappeared, and the powers concerned now view these contracts from the sole standpoint of developing and strengthening China. If this is true, then it should make no difference where railways are constructed in China, providing they develop the country and furnish a suitable security to the bondholders. We hold these principles to be self-evident.

The consortium agreement provides for pooling in a common pot all existing and future loan agreements guaranteed by the central and provincial governments of China. The only exception relates to existing agreements upon which it can be shown substantial progress has been made. Into the common pot the four groups have pooled: the Hukwang, Reorganization, Currency Reform, Industrial Development, Pukow-Sinyang, Nanking-Hunan, Jehol-Taonan, Tsinan-Shuntehfu, Kaomi-Hsuchow, Chinchow-Aigun, Siems-Carey, Grand Canal, Continental and Commercial Trust and the Pacific Development loans. The Belgian group was offered a one-ninth participation to include their holdings in the pool. The independent French group, headed by the Banque Industrielle de Chine, was excluded through the objections originally raised at the Paris meeting by the official French group. It is hoped, however, that a way will be found to bring this important institution into the consortium. The Pauling contract was not officially included in the pool, though it is understood that this firm is quite willing to join the combination. In other words, the official pool is at present limited to the holdings of the official groups, the independent French, British and Japanese institutions being still on the outside. In view of the fact that the most important agreements cover the financing and construction of railways, the main purpose of the consortium is to find some equitable basis for negotiating a new understanding to carry out their compromises. In effect, the policy of the consortium must be a railway policy. It will stand or fall on this issue.

The consortium agreement, provides amongst other things, that it shall remain in force for the period of five years, but a majority, or, three of the four powers concerned, can terminate the agreement at any time. The American government has emphasized in many public statements that the main object of the consortium is to eliminate the spheres of influence, restore China's sovereignty and generally strengthen the position of the central Chinese government. This sentiment has been strongly supported by the British government and by Sir Charles Addis, the head of the British group. Once the Japanese were convinced that their vital interests in Manchuria were not to be singled out for attack, they also cordially accepted these sound principles, and are now equally earnest in their desire to find a practical plan that will give effect to these worthy ends. In accepting the aims underlying the American invitation, the Japanese group has given its whole-hearted support to any plan deemed best by the American group, and loyally refrained from questioning or interfering with the policy laid down by Mr. Lamont. As a matter of fact, however, the Japanese entertain certain views as to how the consortium can be made a success, but are loath to express themselves for fear of being misinterpreted and accused of interfering with the American program.

Mr. Stevens, the representative of the American group, has arrived in China and given out several important statements concerning the object of the consortium and the conditions upon which loans will be made to China. But up to the present, no

statement has been forthcoming which would indicate that the consortium has any set policy or program for placing into execution its widely advertised plan to strengthen the central Chinese government by the restoration of its sovereignty. The consortium holds that the resumption of railway construction in China is of first importance, and is willing to enter into a new arrangement with the Chinese government, along certain lines, that will bring this about. It has very firm ideas as to how this should be done, and on the whole these are advantageous to China. But Mr. Stevens has not as yet opened negotiations for railway construction. In fact, there is every indication that a serious deadlock has been created, which may result in defeating the objects of the consortium. It would appear that Mr. Stevens is waiting for the Chinese to make the first advances, while the latter have openly stated that they will never ask the consortium for a loan, basing this objection to the fear that their administrative independence will be further impaired in terms for supervision over the expenditure of the loans. The situation is not reassuring. In effect, it may be assumed that the way of the consortium, although paved with the best intentions, is liable to lead to a prolonged stalemate, during which time events may well arise that may hasten its dissolution.

The situation is therefore fraught with great danger. Valuable time is being wasted. The higher interests of China and the Chinese people demand some practical solution to their transportation problems at the hands of the powers who have complicated the situation by restricting their sovereign rights in the construction of much needed railways. The highest interests of the powers collectively, and especially those of America and Japan, call loudly for an equitable and harmonious program that will permit them to work together and give effect to the sound ideals underlying the consortium. The time has arrived, therefore, to speak frankly and seriously, in order that a way may be indicated to bring about the full restoration of China's sovereignty over her transportation rights pooled through the medium of the consortium. I have discussed this phase of the problem with many Japanese officials and financiers, and without a dissenting voice they have signified their readiness to co-operate in any honest program that will bring peace and stability to their big neighbor and put an end forever to international competition in railway concessions, by restoring as far as possible, China's sovereignty in these matters.

In discussing these problems with the heads of the Japanese group, I discovered a willingness on their part to go even further than the Americans in giving practical expression to the consortium idea of restoring China's full authority over her transportation system. It was pointed out that unless some plan was devised to bring this about there was grave danger in the event of the consortium being abolished, of a return to the doctrine of the closed sphere. The situation from this angle is this. All the old railway agreements with their preferential conditions, together with all special rights and options that go to make up the doctrine of the closed sphere, have been pooled under the new consortium. The special rights formerly held by individual nations or their nationals are now internationalized under the consortium. As far as China is concerned there is no difference in the situation. The special rights of the individual powers have simply been transferred to an international holding company enjoying a monopoly of support from the interested governments. The danger in this situation arises from the possibility of a dissolution of the consortium as provided for in the agreement. If, by any chance, conditions arise which might necessitate the cancellation of the agreement, then the contracts, concessions, options and special rights now held in the common pool, would automatically revert to their original holders, and China would once more be divided into spheres of special interest, with America on the outside. It was clearly seen that under such conditions, American financiers seeking an outlet for their activities, would sooner or later precipitate a crisis in the interpretation of the "open door" doctrine. In view of the past tendency of Chinese officials working in close harmony with American firms (whose business in China has been built up on an anti-

Japanese basis) to seek new issues by entering into contracts which conflict with rights held by Japan, the Japanese financiers are unanimous in their opinion that any plan that would forever eliminate this menace to the continuation of friendly relations and perpetuate the life of the consortium would receive their hearty approval.

Having made this point clear, the discussion naturally turned on how this much to be desired solution could be arrived at. I found that the best Japanese minds did not differ materially from the ideas of prominent Chinese officials on this subject, and all that was needed was an appeal to public opinion for a square deal to China to help point the way to a solution. If we accept the undoubted fact that the consortium is honest and sincerely desirous of restoring China's sovereignty and strengthening the central government, and that the construction of her railways can now be approached from a purely business viewpoint, then it is clear that it should make no difference to any of the powers where these railways are constructed. If we accept the fact that many of the pooled lines were originally political in character, and that their construction cannot be carried out under the terms and conditions of the contracts, then it is also clear that they should be cancelled or surrendered. On the other hand, China needs many thousands of miles of new railways to develop her resources for the benefit of the world and bring internal political stability to the nation. It is also clear that to do this successfully, China should be permitted to have her own national system of railways designed with a single view to her own requirements.

Instead, therefore, of pooling all these old political rights and options, with the danger to world peace involved in a dissolution of the consortium and a return to the closed door policy, it would seem that the solution lies in surrendering to the Chinese government these old rights, on the condition that an approved national system of railways be designed, and an equal mileage in this system exchanged for the surrendered lines. It is clear that once these old political rights and privileges are surrendered and the secret and other agreements between the powers delimiting spheres of railway activity in China cancelled, China's sovereignty is restored. The slate is wiped clean and the door opened to a new era for the consortium to function without a hitch in financing and supervising the construction and operation of the new national system designed for China's exclusive benefit. Under such conditions, the consortium can enter the field on a strictly business basis, and if, through any misfortune, it should be dissolved, the menace to world peace involved in a return to the closed sphere doctrine will have disappeared. This, in effect, was the plan approved by the members of the Chinese technical commission at Paris, as embodying as near as possible, the ideas of their government and people in treating with the consortium. That the scheme was not accepted by the consortium at the time is due largely to the fact that other matters were brought in to indicate how the lines could be constructed.

In discussing this phase of the problem with Japanese financiers, I gathered the impression that they were in hearty accord with any fair, honorable and practical solution, and should the other powers be willing to accept such a program, I have reason to believe that they will loyally contribute their part in making China's sovereignty an immediate and accomplished fact and carry their share of the financial burden to make it a success. It is therefore left to THE FAR EASTERN REVIEW to propose this solution to the existing deadlock between the Chinese government and the consortium. If, as Sir Charles Addis assures us (and this is self-evident), that the consortium policy must be a railway policy, then the question of administrative loans and advances for other purposes can be temporarily pigeon-holed and every effort concentrated on finding an amicable and honorable basis for negotiating terms and conditions for the construction of railways. It is needless to point out that any plan that will recognize and restore China's sovereignty must meet with the immediate and cordial endorsement of the Chinese people, irrespective of party, and the central government will be enabled to proceed with negotia-

tions with the assurance that the sentiment of the country is with it. It is also superfluous to add, that public opinion throughout the world, will support such a practical expression to the much advertised altruistic ideas which gave birth to the consortium.

The railway problem of China stands upon its own bottom. It bears no relation to administrative, reorganization or disbandment loans with their implied specific security and foreign supervision over the collection of revenues. The only possible measure of Chinese opposition that could disturb the harmony of negotiations would arise in determining control terms over the operation of the completed lines. Here the consortium is strengthened by its possession of the Siems-Carey contracts which provide for adequate foreign supervision over the traffic in addition to a twenty per cent. participation in the profits of the lines. There is little doubt that the Chinese people will bring strong pressure to bear upon their government to make any fair concession in the matter of traffic control and other adequate guarantees for the bondholders, in return for a cancellation or modification of this last provision, so the outlook for a successful termination to such negotiations is far from being pessimistic.

If such a plan meets with the approval of the Chinese people and reflects the opinion of its leading railway officials, and is not out of harmony with the ideas of Japan, then an analysis of the situation leads us to add that the American contractor (Siems-Carey Company) holding a contract for 1,100 miles of lines with an option on an additional 1,500 miles, would place no opposition to the scheme as this company is interested solely in building railways, and does not particularly care where they are built as long as they promise to become a safe investment for the bondholders. The same can be said of Pauling & Company, the British contractors who hold the right to construct the 1000 mile, Shasi-Singyfu line. The railway rights held by the official French group are confined to its participation in the Hukwang contract, and a forty-five per cent. interest in the Chinese Central Railways, Ltd, the official British institution for constructing railways north of the Yangtze River. There are no essential politics in their holdings at this time. The French group is emphatic in desiring an abolition of the sphere of interest doctrine, which has confined its activities to the unattractive possibility of building lines in Kwangsi and Yunnan. This brings us down to the contracts, options, etc., held by the other British official group, the British & Chinese Corporation, Limited. In view of the repeated declarations of Sir Charles Addis (the head of this group), of the necessity of replacing international competition with international co-operation, and his recent utterances about the railway policy of the consortium, it would seem that no serious objection could reasonably be raised to oppose the above plan of surrendering all the pooled railway rights and contracts to the Chinese government in exchange for an equal mileage or participation in a new system of national railways designed exclusively for the advancement of Chiua's special interests.

The league of nations may survive in some form or other, despite the adverse verdict of the American people registered at the polls last November. Great Britain, France and Japan are heartily in favor of its provisions and seem intent upon preserving its usefulness under the original charter. This means that they unqualifiedly subscribe to its provisions which include the abrogation of all treaties that in any way infringe the sovereignty of the member states. Sooner or later, therefore, the time must arrive when all infringements upon China's sovereignty embraced within these secret and other understandings between the powers delimiting their respective spheres of railway activities in China, together with all similar agreements signed by China, will have to be cancelled. Now, Mr. Lamont, chairman of the consortium, recently stated in an address before the University Club in New York, that the Consortium was like a Far Eastern league of nations working in with New China to maintain the peace of the Far East and thus promoting the peace of the world.

Just so. If that is the case, then the first step of the consortium should be to live up to the ideals of the parent league and

apply its principles to a member state without awaiting formal action to cancel these instruments which infringe upon China's sovereignty and circumscribe her liberty of action in constructing necessary railways. If the consortium is to become in fact a Far Eastern league of nations, China must enter the league on a basis of full equality. Once the assurance is given that China's sovereign rights are to be safeguarded and that her own national system of railways is to be made the basis of future consortium negotiations, a grateful people will get behind and support a strengthened central government in any equitable plan that may be negotiated for their financing.

Mr. Lamont voices the unanimous sentiment of the business element of the United States. It wants peace in the Pacific, and to this end it demands the elimination of all possible sources of friction with Japan. Peace in the Pacific and the maintenance of the "open door" in China will hinge largely upon the policy of the consortium. If it fails to function, and conditions in China revert once more to the closed sphere, with America on the outside insisting upon ignoring the rights acquired by others, the consequences will fall squarely upon the shoulders of those responsible for the birth and defeat of the consortium. The Japanese financiers, harmonizing with the ideas of the Chinese, have pointed one way towards permanent peace. We commend the solution to the very careful consideration of the other consortium powers.

G. B. R.

* * *

The End of the Road

Which Way! President Harding?

WE realized at the Paris Conference, that if peace between Japan and America was to be maintained, Japan's story would have to be told. We also clearly recognized that only by a full, frank, and harmonious co-operation between the United States and Japan, through the consortium, could China be placed upon her feet and the spheres of influence eliminated. We determined to tell the story. It has been told. In this number of THE FAR EASTERN REVIEW we reprint from "Asia" the testimony of the late Willard Straight concerning his activities in Manchuria. It needs no comment. It tells us in straightforward language that the origin of American policy in that region is based upon the secret plans of the late Mr. Harriman to compel Japan to sell the South Manchuria Railway so it could be included in his world girdling transportation dream. There was no vital principle at stake, no legitimate American interest involved, only the cold, calculated determination of a railway manipulator to destroy the value of a competing line, in order to force acceptance of his terms. Mr. Straight's letters reveal that Mr. Harriman's business associates were maintained in complete ignorance of his plans, thus exonerating Kuhn, Loeb & Company and the American group, of being a party to this intrigue to compel Japan to forego the fruits of her victory over Russia. Mr. Straight and Mr. Harriman worked together and induced the state department to support them in order "to uphold the doctrine of the Open Door". Unfortunately for America, for Japan, and the peace of the Pacific, our state department made their operations the basis of its diplomacy in Manchuria, and at all times since has steadily insisted upon the recognition of our right to the Chinchow-Aigun railway contract. America was thus brought into the middle of the greatest problem that confronts the world in Asia.

Almost simultaneous with the publication of Mr. Straight's story, comes the revelations of Count Witte in "World's Work," corroborating the existence of the secret Russo-Chinese alliance directed against Japan. The disclosure of this alliance at Paris completely modified the entire Far Eastern question. Count Witte's evidence at this time completely supports THE FAR EASTERN REVIEW's presentation of the basic facts in the controversy, and together with the story of Mr. Willard Straight, sums

up the case for Japan in Manchuria and Mongolia. We have come to the end of the road. Their evidence will stand. The American people will refuse to get excited over an issue which had its inception in the brain of the most audacious railway and stock exchange manipulator our country has produced.

Japan's case is exceptionally strong. It has, perhaps, been somewhat weakened by the attitude of her military in Siberia, Chientao and elsewhere. Notwithstanding this, we believe that there is a meeting ground, where these issues which affect the peace of the Pacific, of the world, can be amicably adjusted to the satisfaction of all interested nations. There is only one way to do this, the manly and honorable way, the American way. Let us gather around the conference table and settle these questions amicably and with justice to all. *Which way do we turn, Mr. President?*

* * *

Japanese Merchants in China

COMMENTING upon an important event of the month, the first conference of Japanese chambers of commerce in China held during February in Shanghai, the *Celestial Empire* says this "is a matter of more than passing interest, even if only the fact is considered that it is the first time Japanese merchants from all over China have met together to consider matters in which they are more particularly interested. But besides the fact that the conference marks the inauguration of a new association of foreign merchants which will have for its object the expansion of foreign trade in China, the proceedings appear to have been highly interesting in themselves. The reports published, of course, are all from semi-official sources, but it is usual in China for such conferences to be held in private, and in that respect the con-

ference followed the example of the British chambers of commerce, and in any case there could have been no reports published in the foreign papers in Shanghai, even although the meetings had been open to the press, if they had not been supplied by those interested. From the resolutions proposed and adopted, and the brief references to the discussions which are published, it appears that the conference was above all things eminently practical. The resolutions passed have generally the good of trade for their object, and most would tend to promote the prosperity of China as well as the interests of foreign commerce. Of course, the extension of Japanese influence is above all desired by Japanese merchants in China, but it is by legitimate means that it was proposed that that influence should be extended. It is interesting to note that the methods of the Japanese government were fairly frankly criticised by the proposer of the first resolution. The discord that has existed between China and Japan and the economic boycott of Japan which prevailed in China for some time is laid at the door of Japan's militaristic policy. The speaker recommended that the relations between China and Japan should on the contrary have a social basis. The conference in several resolutions affirmed its adherence to the principle of the open door, and judging from the resolutions passed Japanese merchants in China, as represented by their chambers of commerce, are anxious to co-operate with other merchants in promoting the interests of trade in China and concurrently the prosperity of China. There can be no doubt that such conferences tend to clear the international atmosphere and to promote good understandings, and they are therefore to be welcomed. Matters which are discussed even semi-publicly are likely to be properly conducted. Mr. Yamasaki, the Japanese consul-general in Shanghai, who attended the meetings as an observer, indicated in a speech at the close of the proceedings that the Japanese government is interested in the conference and would give weight to the recommendations.



JAPANESE TRADE LEADERS IN CHINA

1st Row from the right No. 3—Mr. M. Nodaira (Chairman of the Conference and Chairman of Shanghai Chamber); No. 4—Mr. Y. Aioi of Dairen Chamber; No. 5—Mr. Osawa of Tientsin Chamber, etc.

Anglo-Chinese Trade

WHILE so much has been said in the last twenty years about the importance of foreign markets, it is strange that so little should have been done to secure and to expand the immense potential demand for European manufactures which is offered by China. The Chinese were a civilized race when our own ancestors wore skins and paint; they are remarkably law-abiding and industrious; in their own way, too, they are very religious, and although their ancestor-worship is not what we mean by religion, it has the advantage that, while a man may come to disbelieve in the existence of any particular God, he cannot bring himself to think that he had no great-grandfathers. Until recently it must be confessed that the western powers, to whom Japan and the United States must be added, have behaved very badly in China: they treated the Celestial Empire as "the sick man of Asia," just as if it had been a geographical area governed by brigands like the Ottoman Empire.

One of the most hopeful features is the formation of a new body called "The China Consortium," composed of bankers representing England, France, Japan, and the United States. International arrangements have been made before now with the object of getting things done in China, but there was not much pretence that the organisers had Chinese interests at heart, or were doing anything but pegging out claims for their respective countries. The new consortium has been arranged by Mr. T. W. Lamont on behalf of America and Sir Charles Addis, of the Hongkong and Shanghai Bank, on behalf of England. Speaking on the subject in New York, Sir Charles declared that the principle upon which the new China consortium had been formed was "the substitution of international co-operation in China for international competition."

The new arrangement is the result of protracted negotiations, and marks, we must hope, the victory of disinterestedness over territorial ambitions. During the Peace Conference bankers representing the four powers met at Paris, at the suggestion of the United States government, to negotiate a new consortium. Unfortunately, Japan had ambitions of her own, and the foreign office at Tokyo announced that Japan would only enter the consortium with certain "reservations"; in particular, it demanded that Mongolia, Manchuria, and Shantung should be exempt from the operations of the consortium. Washington refused the demand, but the Japanese government appears to have made out that the powers had assented to its reservations. Mr. Lamont visited Japan and China on purpose to induce the Japanese foreign office to withdraw its reservations; in spite of many obstacles he succeeded, and is now able to announce that the consortium is to be "an international partnership for the purpose of assisting China in the development of her great public enterprises." It is only natural that the United States should take a foremost part in these negotiations, for, as the *New York Nation* says, "not only is American honor at stake, not only is the question of peace or war in the East involved in the terms of agreement, but American money must stand behind any loan to China. Great Britain and France, and Japan, too, can lend money to China only by first borrowing it from the United States."

Sir Charles Addis, in a second speech made at the annual dinner of the China Association, explained that one good point about the new arrangement was that it puts an end to the mischievous and dangerous system of spheres of special interest in China. The four powers have given up all individual concessions and options and have merged them in the common pool of the consortium. Moreover, they have undertaken not to establish any separate rates of interest in any future business which may come to them. Unlike the American writer, who seems to have an invincible distrust of the Island Empire, Sir Charles went out of his way to bear testimony to the loyal support of his Japanese colleague during the negotiation, and he is sure that Japan "will carry out the letter and spirit of the new agreement."

Modern trade is almost impossible without transport, and China is very badly served by railways, having, in fact, less than 6,000 miles in an area which is one-sixth larger than the United States. These railways, however, were earning a profit of 10 per cent. on the capital. Under the new arrangements all contracts for railways, material, and supplies will be open for bidding to the whole world. Hitherto, Sir Charles Addis says, railways in China have been constructed in sections by different nationalities; "in future railway construction will be by an international board." If the new China consortium can live up to its declarations a new era should open for the countrymen of Confucius, and it is to be hoped that English exporters will take full advantage of an almost illimitable market.—*The Iron and Coal Trade Review*, London.

Complying with Railway Loan Agreements

THE time cannot be long delayed when American manufacturers of railway materials must again reckon with European competition in supplying the requirements of Chinese railways. Upon learning that the ministry of communications intended to purchase rolling stock from the proceeds of the recent loan for that purpose, the British and Chinese Corporation invited the attention of the ministry to the terms of its railway loan agreements which gives it the option for purchasing such materials. These agreements which cover the Tientsin-Pukow, Shanghai-Nanking and Shanghai-Hangchow-Ningpo lines also provide that British materials will be given the preference. The minister of communications, in his reply, is said to have recognized these options and rights.

Japan's Foreign Trade for 1920

JAPAN'S exports and imports during last year amounted in value to Y. 1,948,415,000 and Y. 2,335,691,000 respectively, resulting in an excess of imports over exports to the amount of Y. 387,276,000. Compared with the preceding year, the figures show a decrease of Y. 150,397,000 in exports, but an increase of Y. 163,446,000 in imports. The exports from Japan of gold and silver bullion during last year amounted to Y. 3,897,000, while imports reached Y. 404,663,000, the figures showing an increase of Y. 77,186,000.

Japan and India's Commerce

WE are hearing a good deal about Japanese competition with Great Britain in India. We always do when business is quiet. In fact when the cotton trade is depressed our competitors are always represented as on the point of ousting us altogether from our great Eastern dominion in all branches of commerce. Perhaps the view is excusable in the circumstances. When we are doing little, what our rivals are doing necessarily bulks larger in the public eye. During the war Japan's imports of all kinds into India and her exports from India went up largely. In imports her percentage of the total rose from 2.7 per cent. in 1913 to 10 per cent. in 1919. But 1920 is credited in the latest statistics with only 9 per cent. In exports the situation proves to be very similar—1913 10 per cent., 1919 13 per cent., 1920 11 per cent.

These figures, which refer to quantities, not values, do not indicate any great advance by Japan in her commerce with India at the expense of Great Britain. In fact they show, on the other hand, that whatever gains were made by Japan during the war

have since been at any rate partially lost. Whether Japan will be able to retain the 9 per cent. of imports and the 11 per cent. of exports is by no means certain. The share of Great Britain in the import trade of India in the first half of the present trade year (April to September) was 63 per cent., against 65 per cent. in 1913 and 45 per cent. in 1919. Of the export trade from India our percentage in the same six months was 21 per cent., against 25 per cent. in 1913 and 31 per cent. in 1919. England is evidently getting back to the pre-war position, and the recent progress has been made, it may be noted, in a period in which commerce has been seriously hampered by many adverse influences.—The (British) *Textile Mercury*.

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Japan's Trade Expansion

MR. JUNNOSUKE INOUYE, governor of the Bank of Japan, disapproves the negative policy of curtailment of production adopted by manufacturers of different lines in Japan. Mr. Inouye believes in the necessity of a positive policy to encourage and increase the export trade of Japan, as a means of disposing of any accumulated stocks of merchandise, and by mitigating the present limitation on production of various manufactures. He thinks efforts should be made to maintain the market developed abroad for Japanese manufacture during the war period, and to further develop market for the sale of staple products of the country in foreign lands. Many ways exist for encouraging development of export trade. The most effective and most important is to reduce the cost of manufacture by adopting the system of large scale industry and to supply goods at lowest possible prices. For this purpose a strong combination or alliance of manufacturers, exporters, shipping and insurance concerns is necessary. That, in brief, is his position in the matter.

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His Fortune for His Country

THE conviction that wealth owes a duty to society has impressed itself on the mind of Mr. Jiro Harada, a business man of Osaka, who has just made a deed of gift of all his property to the nation, represented for the purpose by the Imperial household board of audit. The gift amounts to Y. 10,200,000. It is to be applied for charitable and educational purposes according to the needs of the times and the judgment of the Imperial board of audit. The most remarkable feature is a provision by which the wealth will steadily increase until it will be the greatest foundation in the world. Only 40 per cent. of the revenue is to be spent each year, and the remaining 60 per cent. is to be reinvested. In the course of a generation the principal will have been raised to Y. 35,000,000 (about £4,500,000).

In 300 years the sum will be large enough to pay off the war debt of the world. As time goes on the snowball will increase, and Mr. Harada dreams of a far future when Japan will enjoy from his gift an income greater than she now possesses. It is a great dream.—London *Daily Express*.

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Proof of Friendship

JAPAN has a wonderful opportunity to give practical expression to her desire for closer and more friendly relations with China.

In pursuit of its policy to bring about military co-operation between the two countries for common defense against the spread of Bolshevism, the Terauchi cabinet induced or instructed a group of independent Japanese bankers to advance large sums to the

Peking government. Instead of being expended for legitimate or productive purposes, the proceeds of these loans were squandered in waging war against the Southern party or diverted into the pockets of the Tuchuns. Mostly the latter. China, or the Chinese people received no benefit, but they are called upon to pay the bill. These loans fall due this year.

China is almost bankrupt. The government faces the most critical year in the long history of the nation. By skilful management and robbing Peter to pay Paul, Chow Tsz-chi, the minister of finance, was just able to pull the government through the New Year financial crisis. He is now called upon to devise ways and means to maintain the present cabinet in power and preserve the nation from bankruptcy. His task is unenviable and it is one that deserves sympathy and support. One of the most pressing charges against the public finances is these so-called Nishihara loans, which fall due this year. Unless they can be converted into long term loans at a low rate of interest, China will be in a sorry plight.

The Hara cabinet has now the opportunity and the power to partially undo the errors of its predecessor and consent to the conversion of these unproductive loans into long term notes, and, if the Chinese government is at present unable to furnish adequate security acceptable to the bankers, then friendship and justice demands that in lieu thereof, the Japanese government should guarantee their bankers, and accept the good faith and general revenues of China, that in due time, they will be repaid. It would be unsportsmanlike for Japan to press China for the repayment of these loans when they fall due this year.

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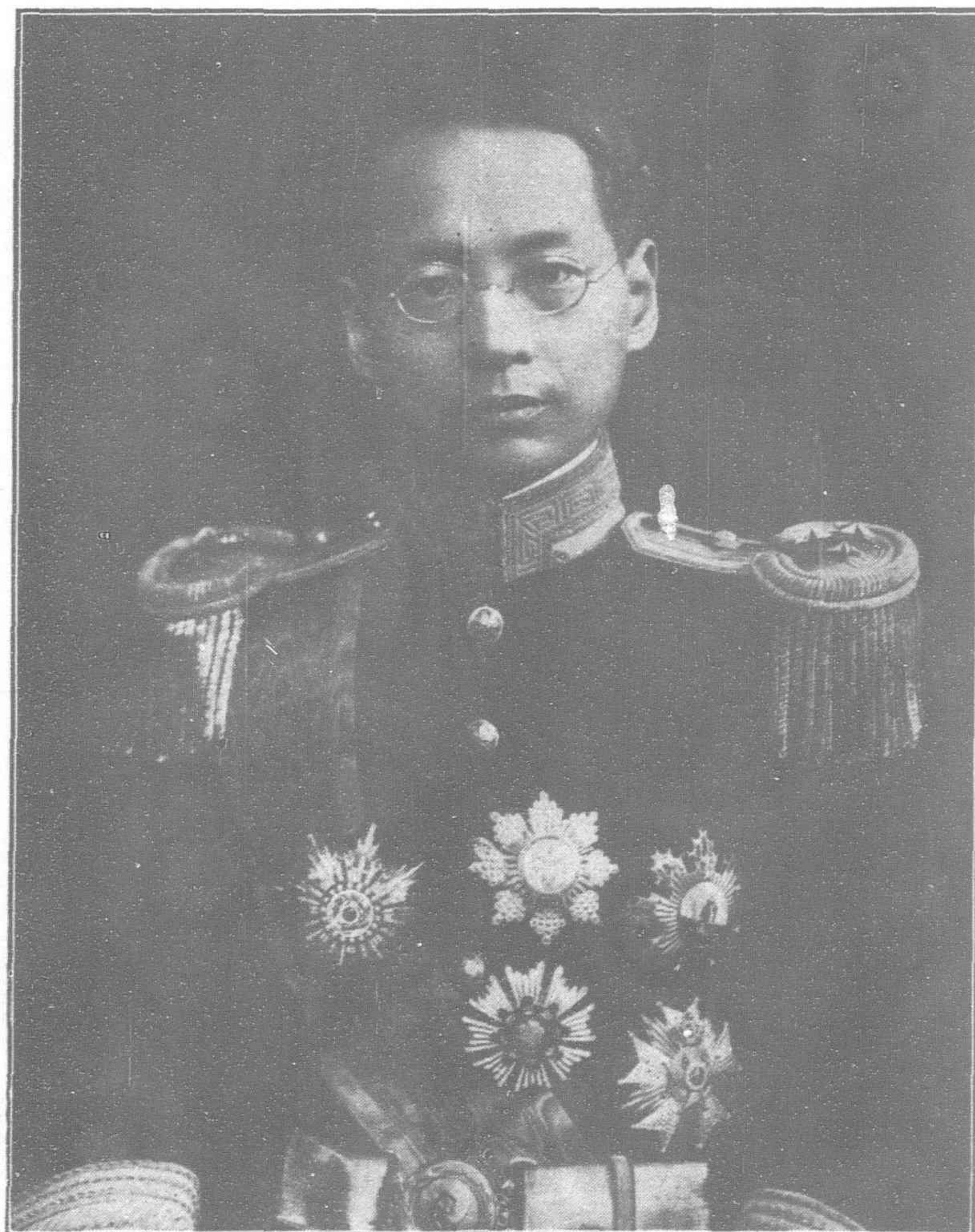
Well Merited

MR. K. C. LI, president of the Wah Chang Trading Corporation, has been awarded the Chiao Ho decoration by the Chinese government in appreciation of his efforts in developing the mineral resources and foreign trade interests of China. On various occasions we have invited attention to the importance of the pioneering work done in America by this modest, energetic young Chinese engineer and merchant, who has broken through the conservatism of centuries and blazed the trail to national commercial greatness that others must follow. Starting during the war with a small office in New York for the sale of antimony, the business of the firm has been expanded until it now enjoys the distinction of being the premier Chinese general import and export concern in New York. Mr. Li and his partner Mr. Liang, early recognized the advantage of conducting a direct business between China and America and foresaw that the time would arrive when the bottom might drop out of the antimony market, and success could then only be achieved in general importing and exporting. It took a long time and much persuasion to convince the conservative old Chinese capitalists of Changsha and Hunan that great profits awaited such a venture. That the capital was raised which enabled this firm to branch out and take its place in the commercial world is due in large measure to Mr. Li and Liang. Over sixty-five of the largest Japanese firms capitalized in the millions opened their offices in New York during the war, but outside of the Mott Street, curio store element, only one representative of modern China had the nerve and enterprise to enter the field and compete for the business of its country with older established, more experienced and better equipped foreign competitors. No foreign merchant of any nationality is more respected in the down-town commercial centre of old New York, than the modest, capable, Chinese gentleman who conducts the business of the Wah Chang Corporation from an office perched up in the top stories of the Woolworth Building. Amongst the many wearers of Chinese decorations, few are more entitled to the honor than K. C. Li. Peking is to be congratulated for this recognition of real service to the nation. It was well merited.

The Brains of the Chiaotungpu

THE most important official position in the Peking government is the one which controls the exchequer. Next to the minister of finance, comes the portfolio of communications, which brings in a steady and ever increasing income from the operation of railways, posts and telegraphs. The minister who directs the Chiaotungpu holds the most enviable position in China, and, fortunately for the nation, it has at last an executive in charge of this department who understands his business. Schooled under Sheng Kung-pao and Liang Shih-ji, the new minister Mr. Yeh Kung-cho, is without question the most brilliant and capable Chinese administrator who has been called upon to direct the operation of China's national railway system.

In urging a Square Deal for China in restoring the sovereignty of the government over its lost railway rights, we are simply reflecting the views of this expert in the intricacies of the international politics surrounding the transportation problem of his country. We collaborated with Mr. Yeh in Paris in drafting a plan that it was hoped might be acceptable to the consortium and which might serve as the basis of negotiations without loss to China's dignity. In 1914, we also co-operated with Mr. Yeh in designing a national system of railways for China (which was subsequently awarded the grand prize for excellence) and in organizing an international corporation designed to finance and construct the lines. Unlike many of his predecessors, Minister Yeh has been animated by a single desire to benefit his country and restore as far as possible China's absolute control over her transportation system.



Hon. YEH KUNG-CHO

China's Minister of Communications. Schooled under Sheng Kung-pao and Liang Shih-ji. China's foremost railway administrators. Mr. Yeh stands to-day as the best equipped expert on China's railway problems.

In years to come when the story of China's struggle for independence can be written by an impartial historian, the name of Yeh Kung-cho will stand out prominently as the one Chinese railway administrator, who, at all times, did his utmost to uphold

the dignity and preserve the sovereignty of his government in eliminating spheres of political and commercial influence carved out by foreign railway concessions and contracts. If the consortium is to help China by creating a strong central government it will be greatly assisted towards this worthy end by giving careful consideration to the views of Minister Yeh Kung-cho, the Brains of the Chiaotungpu.

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Vanderlip's Diagnosis

FEW indeed are the Americans who correctly diagnose the basic causes of unrest in the Orient. Frank A. Vanderlip stands out as one of the very few who has applied his own brains to a profound study of the existing problems in this part of the world. Unswayed by propaganda and special pleading, Mr. Vanderlip has placed his finger on the root of the Far Eastern and Pacific problem. Speaking recently at the luncheon of the Radcliffe Club held at the Hotel Astor in New York he declared that it would be better to build a railroad in China than to make futile efforts to save the 10,000,000 lives perishing there now through famine. He maintains that the balance of trade is the most important issue of the world to-day and that no league of nations or any substitute for it could relieve present conditions.

"Congestion of population will always breed war," said Mr. Vanderlip. "It is because of congestion that all nations endeavor to branch out. That is why Austria is starving to-day. It is this same congestion that is costing the lives of millions in China. And when I say that I would rather build a railroad in China than save the 10,000,000 lives now being lost there, it is not from lack of sympathy for the situation there but because of a greater sympathy for the future generations. We must all be guided by intelligent self-interest—that is, interest for our people and an eagerness to progress, and a league of nations or a similar document would not encourage such progress. We must have an incentive for progress, and competition with other nations is the greatest and in fact the only incentive in trade relations."

"During the last seventy years the population of the world has increased 700,000,000. This increase of 1 per cent. a year is bound to bring about great economic problems. It has made it necessary for people to specialize and it has caused congestion in certain districts. In the case of China the population has increased so much more rapidly than the nation has progressed that they now find themselves in the deplorable condition of having millions of their people without food. Even if we could gather enough food for this vast number we could not get it to them in time to save their lives, for they have such inadequate means of transportation. Therefore, since we are unable to help these suffering people materially, it would be far wiser for us to centre our attention toward building railroads for them, thereby preventing a recurrence of such a condition and enabling the future generations to carry on trade with other countries."

The Reason is Plain

ACCORDING to the *Tokyo Yamato*, "German residents in Japan are steadily increasing in number. As compared with pre-war days, the number has been practically doubled. Most of the newcomers are employed by Japanese firms as engineers, or in some technical capacity." It would seem that the propaganda of Dr. Solf to use "German brains to develop Japanese industries" is bearing fruit. We have steadily condemned the movement which is turning Japan against America, and if Japan now calls upon Germany for technical advice and direction, American manufacturers will have only themselves to blame. Some day, Americans may have to hold an inquest into the causes which have brought about a loss of trade with their best Asiatic customer. The reason will be plain. They have been warned in time.

Mining Conditions in Inner Mongolia

JEHOL and Chahar are two of China's special administrative areas, independent of its twenty-two provinces. The latter are ruled over by *tuchuns* or military governors and *shengchangs* or civil governors, whereas the former are supervised by *tutungs* or high military officers. Jehol and Chahar are situated on the northern borders of Chihli and Shansi provinces, bounded on the east by Eastern Inner Mongolia and South Manchuria, and on the west and north by the southern portion of Outer Mongolia. Until the founding of the republic, Jehol was a favorite summer resort of the Manchu reigning family and it is still famous for its imperial hunting park, the celebrated art treasures of which are now housed in the Peking Museum of Curios and Antiquities, behind the Central Park.

Like many other places in China, these two areas are also rich in minerals. For example, as regards zinc, lead and silver no less eminent an authority than V. K. Ting, director of the geological survey of the Chinese republic, has testified to the fact (in the FAR EASTERN REVIEW, July, 1917, and February, 1919) that these three metals are chiefly found in north Chihli and north Shansi, "usually, small in amount but rather rich in silver—the richest galena from Jehol contains as much as 100 taels per ton." And as regards gold deposits of the recent alluvium variety, which is by far the most important, Mr. Ting also mentions that it is found in Manchuria and Outer Mongolia . . . "and in the small streams in Shantung, Honan and Jehol."

Below are some notes summarised from a recent report to the Ministry of Commerce and Agriculture by one of its technical experts. They refer to gold, coal and lead deposits in these two areas.

GOLD DEPOSITS.—The report describes gold deposits in the West Chan-tse Creek, in the district of Ch'eng-teh, and distant from the district city about 40 *li*. It is not known when this mine was first worked, but until 1909 the pickings were all done by native inhabitants. In the summer of that year the Tutung of Jehol conceived the idea of working the mine on an official basis. A certain Mr. Wu was put in charge and some \$5,000 was invested. The undertaking dragged on for four years and the mine being worked at a loss, operations were then suspended.

The deposits spread over three mountain ranges and the belts are fairly parallel. They lie from east to west, about three or four *li*, and then drop from north to south at an angle of eighty or ninety degrees. The most northern layer has an average width of one foot; the central belt, two and a half feet; and the most southern belt, six or seven feet. Of the three the central vein is the richest in gold. Owing to geologic changes at various periods none of the veins is one continuous, unbroken whole, but all are broken in the middle and these tend to make one overlap into the

other—a fact which deserves to be remembered especially by future prospectors.

The old mining area is not definitely located. From north to south the length is about seven or eight *li*, and east to west five or six *li*. The two deposits which merit the most attention are those in the central vein and the washings in the Chan-tse Creek itself. As far as could be ascertained, the total output of the old mine was 648 ounces of gold, whereas the washings in the stream amounted to only 14 or 15 oz. Of these 648 oz. the northern and southern veins produced only fifteen ounces each: the entire remainder was credited to the central vein alone.

To estimate the wealth of such deposits, let us take the following figures. The excavated portion of the East Creek Mountain range is 150 feet long and 150 feet deep and 2½ feet thick, or a total of 56,250 cubic feet. The second excavation in the Ying-p'o range is 100 feet deep, one-half *li* or 600 feet long and 2½ feet thick, or a total of 150,000 cubic feet. The total output of the central vein being say 600 oz., divide 600 by 56,250 plus 150,000 or 206,250 cubic feet, and the result is 0.0029 oz. of gold per cubic foot. So if the vein be three *li* or one English mile long, 50 feet deep, and 2 feet thick, the total gold-bearing capacity would be 2,088 ounces.

Under the circumstances, the mine is by no means poor, since the gold-bearing vein in the state of California is known to be capable of producing 0.001 oz. per cubic foot, whereas here it is 0.0029 per cubic foot. Yet owing to unscientific methods of working, etc., the less rich vein is the more prosperously worked of the two!

The streams also seem to abound in deposits, as the natives

could be seen gold-washing half the time and ploughing their fields the other half of the time. But the efforts do not appear to be very productive, the net results being only two or three grains of the precious metal.

COAL DEPOSITS.—Coal abounds in Jehol and Chahar, and the above-mentioned report to the ministry of commerce and agriculture refers to coal mining in two separate districts: Fou-hsin Hsien and Ch'ao-yang Hsien.

As regards the former the first mine in Chia-ma-so was opened by one Mr. Chang in 1899 who was immediately followed by a number of other native prospectors. The methods of operation, however, were primitive and nothing tangible was obtained. In 1904 an English engineer, Mr. Mole, was sent by the Peking ministry of communications to report and investigate, etc. Shafts were sunk to a depth of 300 or 400 feet and the locality was found to abound in coal. Somehow or other operations were discontinued four years after, but at present there are still ten places in the neighborhood which are being operated by native inhabitants. Almost continuous with the coal strata of Chia-ma-so are the coal beds of Lama Camp, but the superstitions of the local Mongols have heretofore barred any prospecting and development. Recently,



On the Way to Jehol

however, the Hua Feng Industrial Development Company, of Tientsin, has applied for official permission to mine both places, the areas of which are estimated to total over 30,000 *mow* or 5,000 English acres.

Chia-ma-so is situated at the east of Fou-hsin district city, distant from Mai-chia-wo Station, on the Peking-Mukden Line, 120 *li*. Lama Camp is situated north-east of Chia-ma-so and separated from it by a distance of 10 *li*. The whole area is covered by a layer of yellow soil, but the country is most flat, unbroken by either rivers or mountains. Coal is met after digging 40 feet and the coal seams then incline 35 degrees to south-east. The bed is over 20 *li* long. Two coal layers have been seen and between them is a layer of sandstone two or three feet in thickness. The coal stratum above this sandstone has an average thickness of two or three feet; whereas that of the stratum below the sandstone is from 15 to 16 feet. Consequently most of the excavations have been on the lower stratum, as the coal is also reputed to be superior in quality. From the lower stratum the excavation can continue for another 30 or 40 feet, and then further progress will be stopped by the accumulating water.

The coal produced is bituminous and is of two grades: lump and dust. It is not suitable for smelting purposes, and leaves much ash. It contains a considerable percentage of sulphur and so is easily self-combustible. This self-combustibility may in most cases be due to faulty ways of storage, but it is also known to be due to the poor quality of the coal itself.

As expected, the methods of mining are primitive, although in one or two places a steam boiler is employed to generate steam and work the pumps, etc. The miners are paid 16 or 17 coppers a day, and each person is said to turn out 1,000 catties of coal a day. Operations are possible only in spring and winter, as there is too much water in the other two seasons. The coal produced is chiefly consumed locally or in the surrounding districts. The price is 15 to 20 silver cents per picul or 100 catties, and the transportation charges work out at one cent per *li* for every picul. The retail trade is in the hands of contractors who pay into the local taxation office an annual contribution of Tls. 11,000. In return for every thousand catties of lump coal turned out the contractors get 120 catties and the local Mongol chief 40 catties, and for every hundred baskets of coal dust the contractors get 12 baskets and the Mongol chief 4 baskets. In addition the purchaser has to pay the coal producer 100 cash for every 100 baskets of dust coal and 150 cash for every 1,000 catties of lump coal. These rates are said to be ten times higher than the regulation prices, but they are settled by local custom.

From 1899 to 1913 seven companies operating independently over 1,634 *mow* of land are credited with an annual production of 30,000,000 catties lump coal or a total of 420,000,000 catties. The quality of the coal being poor, it is probable that better coal might be found at a greater depth, which means of course more up-to-date methods of tackling with the water problem. On the other hand,

unless operated on a large investment scale, it is not easy to find a good outside market for such output, since it can hardly compete with the coal from either Fushun and Pen-hsi-hu in the north or Kailan in the south.

The local inhabitants also speak of gold having been seen in considerable quantities in this district—a fact which seems to lend color to reports of the influx of Japanese into this region in increasing numbers. Consequently, the gold mine in T'a-tse Creek, 15 *li* south of Fou-hsin district city which was opened in 1906, became a joint Sino-Japanese enterprise in 1918.

CH'AO-YANG COAL MINES.—Ch'ao-yang district is rich in coal. The report to the ministry of commerce and agriculture refers to four coal mines in the north of this district, three in the south and half-a-dozen in the west, north-west and north-east, etc.

Of the four in the north two especially are worthy of mention. These were first opened by one Mr. Tu about the middle of the last reigning dynasty, say the end of the 18th century. In 1876 operations were suspended owing to the swamping of the mines; in 1896 the concern was made official and 7 per cent. of the production constituted the government royalty tax. Ten years after the royalty tax was increased to 15 per cent.: since then the undertaking reverted back into private contractors' hands and these pay into the official bureau an annual contribution of Tls. 10,500.

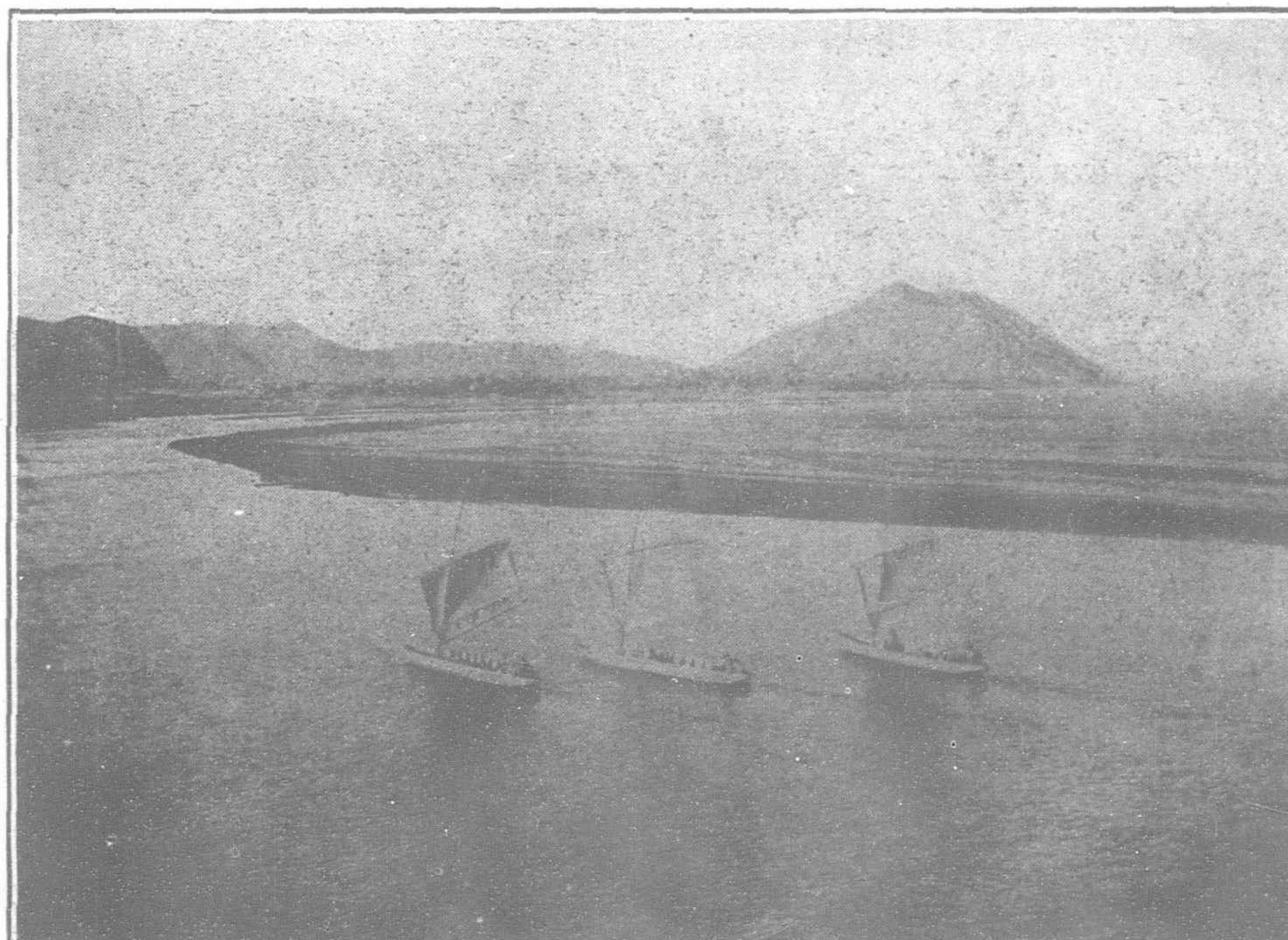
The most flourishing of these four is Mu-to-t'u-ou-lai situated 90 *li* north of the district city. Coal is seen at a depth of 125 feet and of a thickness of 7 feet, sandwiched between limestone and sandstone. The bed extends for quite 40 *li* and the coal is richly bituminous. It gives off a considerable amount of heat, but leaves a small quantity of ash, suitable also for smelting purposes: hence the native iron-workers of the locality all use such coal. These

mines are included within the 30,000 *mow* applied for by the Hua Feng Industrial Development Company of Tientsin.

As in the Fou-hsin mines the methods of operation are primitive, although one or two boilers are also in evidence. The miners are paid from 14 to 20 coppers a day and the mining tax is in the form of perquisites to the contractors as follows: 15 catties per every 100 catties, and one copper cash for every basket of 100 catties of dust coal. The output is carried by carts or mules to the district city at the rate of 32 coppers per picul, and at the destination it is sold at 43 coppers per picul. Three companies are working on this mine, and their annual production is estimated at 1,500 tons, 900 tons and 140 tons, their respective areas and number of miners being 428 *mow*, 475 *mow* and 90 *mow*; 300, 450 and 220 men.

As in the Fou-hsin mines so in Mu-to-t'u-ou-lai, considerable capital is needed to develop this wealthy coal-bearing field, especially as the competition of Kailan, Fushun, Pen-hsi-hu and other richly capitalised mines must be taken into consideration.

The three mines in the south of Ch'ao-yang are separated from the district city by a distance of 170 *li* but are only 70 *li* from Nu-erh-ho Station, of the Peking-Mukden Railway. These were



The Lan River—the route to the Mining Regions of Jehol

first discovered also about the end of the 18th century. In 1897 the three owners, owing to inability to tackle the water problem in their mines, sold them to the Peking-Mukden Railway Administration who sent the above-mentioned Mole to assist, etc. Work was continued for another four years and then operations were suspended owing to the depredations of the local bandits, etc.


The coal beds are 17 *li* long and 3 *li* wide. The seams are very rich, displaying after a depth of 320 feet no less than 10 different strata of coal, both anthracite and bituminous, of a varying thickness from three to seven feet. Both grades of coal are of superior grade, suitable for smelting and other purposes. Even operated by primitive methods the yield per annum is reputed to be 25,000 tons. Here the royalty tax is slightly lower. The contractors pay into the official bureau an annual contribution of Tls. 1,500: so 10 per cent. of the output goes to the contractors and 2 per cent. to the Peking-Mukden Railway administration. The production is consumed locally, and in the neighboring villages it is sold at 20

or 30 cents per picul. Prior to acquiring these mines, the Peking-Mukden Railway administration used to spend over Tls. 30,000 a year in the purchase of such coal.

As in Fou-hsin, so in Ch'ao-yang gold deposits are reported to have been discovered in over ten different places, and as usual the Japanese are already on the spot investigating and prospecting, etc.

Lead Deposits

North-west of Kalgan some 180 *li* lead deposits are reported to have been discovered among three ranges—Big Silver Creek, Small Silver Creek, and Peony Creek. These ranges extend from east to west for 40 *li*, and within their hollows two old disused shafts are still discernible. According to stray pickings, the lead deposit is of superior grade, and the seams vary from one inch to 8 inches in thickness. According to the natives, these two shafts were sunk some 50 years ago to a depth of some 150 feet; since



MAP OF CHAHAI, INNER MONGOLIA

then they have not been used and now are more or less unserviceable.

In the same neighborhood are a number of mines producing either anthracite or bituminous coal. Two of these deserve some mention.

The first is T'u-mu-lu mine, situated 60 *li* west of Kalgan or 100 *li* from Kuo-lei-chuang Station, of the Peking-Suiyuan Line. The locality is very mountainous and very difficult for transportation. It was first opened in 1908 by a Mr. Li, a merchant from Mukden, who organised the Heng Shen Mining Company. It is capitalised at Tls. 80,000 and operates over a field of 940 *mow*. The coal produced is superior bituminous, burns with plenty of heat but leaves little ash, suitable for smelting purposes. The seams are of a thickness varying from 4 feet to 10 feet or more and are over 20 *li* in length.

There are 2 inclined shafts and present excavations have reached a depth of 340 feet. Three boilers have been installed, each with a capacity of 120 H.P. and costing altogether \$3,800. The coal carriers are paid 6 coppers for every 80 catties carried to the pit-hole, and three carriers' work is calculated to be equal to that of one digger. There are altogether 100-150 miners, 11 pump men and 30 guards, representing a monthly pay roll of Tls. 400. The annual production is 9,600,000 catties or 5,800 tons. Each catty of coal is sold at 3 or 4 cents and the purchasers often coming from 100 *li* away, have to make their purchase at the pit hole. Accordingly the mining company does not have to worry about transportation or agency problems, but this labor-saving scheme is also the main cause why its output is restricted to only the neighboring market.

What may be considered as a stratified extension of the above is the coal bed of Ma-lien-chi-t'a which is distant only 15 *li* to the west. It was first opened about 1870, but one Mr. Chang and his Ch'eng P'ing Mining Company acquired it in 1908. The concern is capitalised at Tls. 12,000 and also operates over 960 *mow*. The coal is of the anthracite variety, most suitable for stoves and grates. The bed is 15 *li* long and has a varying thickness of from 5 to 12 feet. The methods of operation are similar to those of the T'u-mu-lu mine, except that the location here is higher and so there is comparatively less water to be encountered. The number of men employed varies from 60 to 200, including miners and pump men. The annual production is estimated at 3,175,000 catties or 1,900 tons.

Forty *li* north-west of Ma-lien-chi-t'a is the Four-Village Mine. In 1896 it was first operated by small diggers; in 1908 it reverted to the above Mr. Chang of the Ch'eng P'ing Mining Company. Owing to obstruction by a Chinese named Tuan, who succeeded in overawing the local magistrate, the mine is still undeveloped. On the other hand, Tuan himself declined to take out an official permit to work it, and so the mineral wealth is allowed to remain idle.

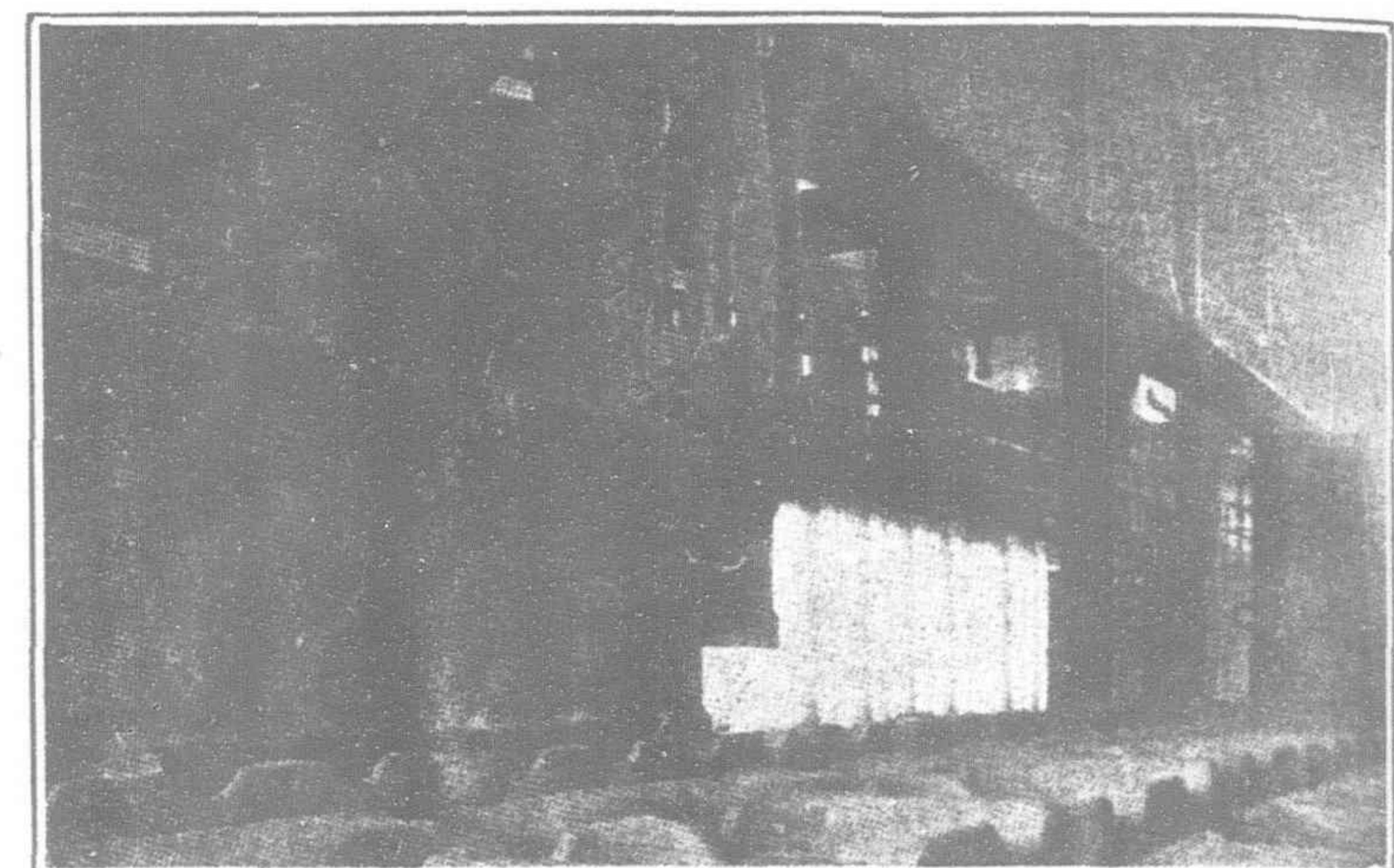
Why American Ingot Iron Costs More

By C. F. Faulk

AMERICAN ingot iron is more nearly a pure iron than any other commercial iron, it is more dense in structure, and the very small amount of impurities, or substances other than iron still left in its composition, are so uniformly distributed as to make their deleterious effect practically negligible. Its wonderful superiority in rust-resisting qualities is but one of the several uses in which this iron has won first place in the modern industrial world.

The first step in the manufacture of American ingot iron is the transformation of about equal parts of pig iron and ferrous scrap into ingots of the pure iron. This is accomplished by melting these two raw materials, together with lime, in the open hearth furnace.

It takes from twelve to sixteen hours to melt down this mixture, or charge as it is called, and retain it in a molten state long enough to allow the removal of almost the last vestige of impurities. When at last the experts decide, with the aid of various chemical control and fracture tests that the molten metal or "heat" is ready to tap, the spectator is treated to a sight that would take the pen of a Dante to describe. With a roar of sound and a burst of light that can only be viewed through clouded glasses the great stream of liquid fire bursts forth from the furnace with seemingly irresistible force only to be quickly caught and securely retained in a great iron receptacle lined with brick and called a ladle. Probably here is witnessed one of the most spectacular differences between the making of ingot iron and ordinary steel. The iron is tapped at a temperature of from 3,000 to 3,100 degrees Fahrenheit, while steel is tapped at from 2,700 to 2,800 degrees Fahrenheit.



Ordinary pig iron and scrap cannot be used in the making of this special iron. Special stress is laid on a very low copper and sulphur content. Of course selected scrap and pig iron cost more money as is the case with every selected commodity. Even the coal which is used to make the gas that rolls in waves of fire over the molten bath must pass under rigid inspection and analysis, lest it carry sulphur in sufficient quantities as to allow its absorption into the molten iron. Any coal containing over one per cent. sulphur is rigidly rejected. No extra cost in material is too great and no detail too minute if it but contribute to the elimination of impurities and thus increase the service of the finished iron. One illustration is the use of pure aluminium as the degasifying agent in the ladle. In degasifying American ingot iron there are several methods which could be used but the method used involves the most expensive materials and processes because they give the highest degree of degasification.

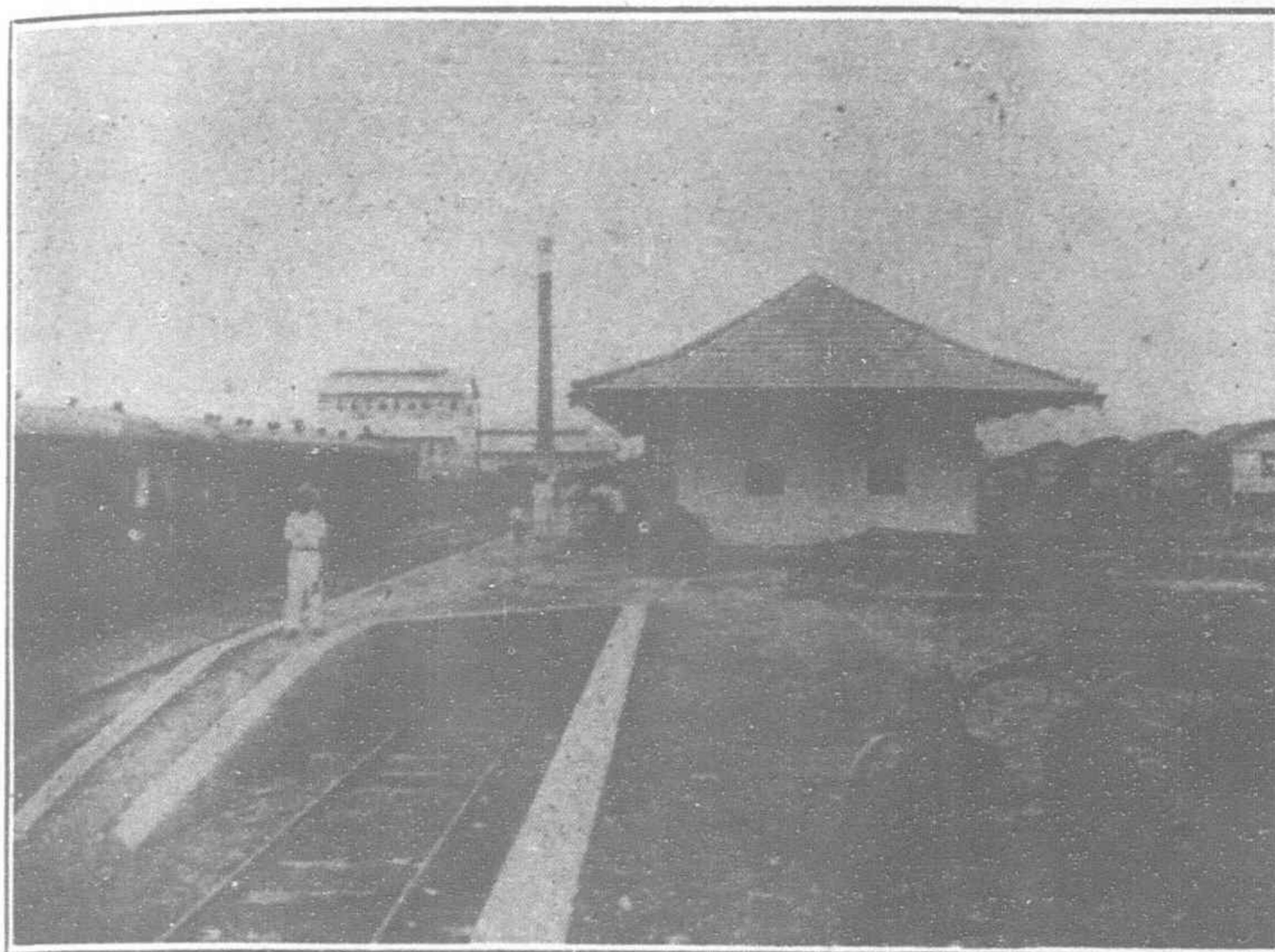
The extra material cost of ingot iron over steel does not stop with the quality of the materials used but is further increased by the quantities necessary. Fuel for heating is the big item in this connection. As has already been pointed out ingot iron must be heated to a great deal higher temperature than steel in the open hearth. This statement holds true in all subsequent steps of manufacture where heat is required, as in the soaking pits, the bar, sheets, and annealing furnaces. Moreover the higher heat must be maintained longer in each of these operations. In the open hearth an ingot heat requires on the average one-third more time than a steel heat. In the soaking pit the ingot of pure iron requires an average of eight hours as against six hours for steel, and in the annealing furnaces the additional time for ingot iron sheets runs into several days.

All operations that require excessively high temperatures and the consequent additional skill and care also increase the labor cost.

American ingot iron is made under the most perfect conditions and with every mechanical facility that careful research can discover or engineering ingenuity devise.

Sugar Activity in the Far East

THE correspondent of the *Louisiana Planter* at Honolulu, under date of September 1, 1920, says that sugar mill machinery manufactured in and shipped from Honolulu within the last two weeks had a total value of approximately \$650,000. On the steamer *Eastern Importer*, which left recently for Iloilo, Philippine Islands, a shipment of machinery worth \$400,000 was despatched by both the Honolulu Iron Works and Catton, Neill & Co. Another



Carmen Sugar Central in Back Ground, Luzon, P.I.

shipment which left a few days later for Manila was valued at \$250,000.

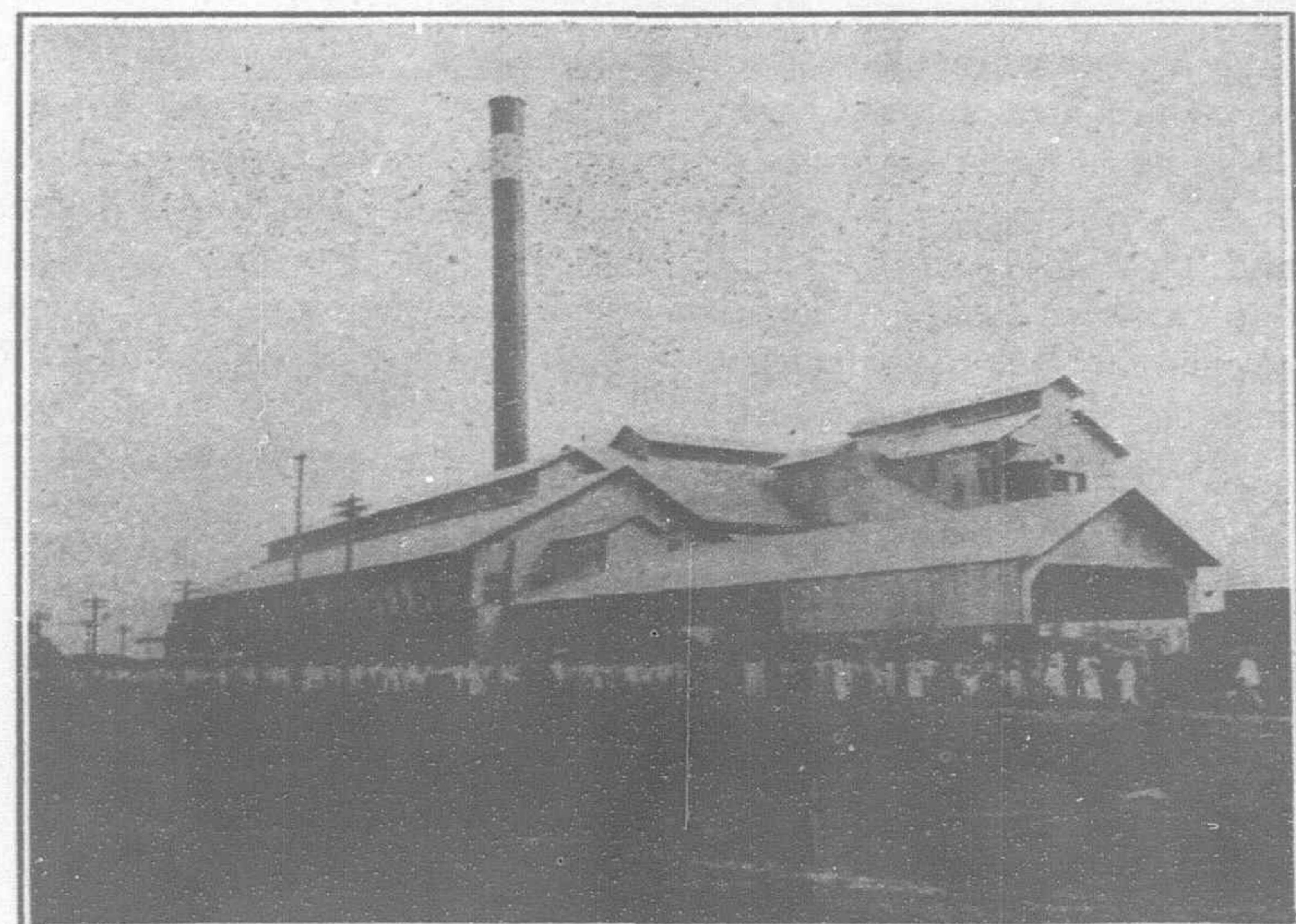
Catton, Neill & Co., iron founders of Honolulu, have purchased seven and one-half acres of land on the Iloilo river, near the wharves of Iloilo city, Panay, P. I., and will erect there a foundry of sufficient size and capacity to take care of any work which may be required on Negros or neighboring islands. With a plant at Iloilo the company will have a strategic advantage over Manila enterprises in handling the business of most of the sugar mill sections of Negros, for the reason that Manila has to ship machinery or other materials to Iloilo and have it lightered across the channel, 27 to 30 miles, to Negros. The new plant will cost in the neighborhood of \$100,000. It is still the purpose of the company to establish a branch at Manila to take care of work on the island of Luzon.

In the opinion of Elmer D. Merrill, director of the bureau of science of the Philippines, American control of the Philippines has made the islands what they are to-day. "Sugar centrals," he says, "have come into operation within the last few years and it is noted that the people most interested in this industry are two Hawaiian concerns, the Honolulu Iron Works and Catton, Neill & Co. So far as I can see, if the government remains satisfactory, there is no reason why the islands should not exceed Hawaii in the production of sugar. The development of the Philippines, I think, has been due in no small degree to the character of the first American administrators. They were men of the

pioneer type who wanted to see what could be done. They were asked to do the seemingly impossible, and succeeded in accomplishing it."

Formosa Sugar Notes

There are 37 sugar mills in Taiwan equipped with modern machinery. Most of the machinery is of British make, although American and German machinery is also in use. There are about



Carmen Sugar Central, Luzon, P.I.

250 mills of primitive types, which appear to owe their existence to the difficulty of transporting the cane in some of the more remote districts, and there are 24 mills of the primitive type classed as "improved."

Production and exports during the past five years were as follows:

Year.	Production.		Exports.	
		Pounds.	Raw sugar.	Refined sugar.
1915	...	459,567,351	435,694,543	29,586,400
1916	...	707,786,106	656,154,995	52,641,152
1917	...	1,009,868,580	844,546,107	79,221,894
1918	...	758,645,205	600,560,943	75,599,782
1919	...	643,227,998	551,244,341	138,182,629

The general prosperity of the sugar industry in Taiwan is shown by the fact that the greater part if not all of the principal sugar companies are contemplating substantial increases in capital during the present year. This would seem to indicate, to some extent, plans for future expansion of production equipment which should give opportunities for the sale of agricultural, milling, and refining machinery.

Hongkong Notes

During 1919 Hongkong imported 403,733 short tons of sugars, compared with less than half that amount in 1918. Of this sugar Java furnished the greater portion. It is stat-



Sugar Cane in Occ. Negros

ed that the imports from the Philippines were smaller in 1919 than in 1918, the demands from the United States taking the Philippine stocks away from the Hongkong market. Of the 474,000 tons imported in 1918 into Hongkong, 338,000 tons came from Java; the Philippine Islands gave 96,000, China 25,000, and the Straits Settlements 13,000. In 1919 372,000 short tons of sugar were reported; of this 282,000 came from Java, 57,000 from the Philippines, as against 96,000 the year before, and 29,000 from China and Indo-China. In addition to the raw sugar, nearly 12,000 tons of refined white sugar were brought in from Java.

Java Notes

Through the medium of the General Syndicate of Sugar Manufacturers in Netherlands India, 153 out of the 184 factories who have joined that body, supplied particulars relative to the sugar cane harvest and cultivation during June.

The figures showed that:

146 factories harvested cane, namely, 29,669 bouws (=21,055 H.A.) resulting in 30,366,469 piculs (=1,875,433 tons) of cane and 3,633,273 piculs (=224,700 tons) of sugar (converted in standard muscovados). Calculated per bouw, therefore 1,024 piculs of cane and 123 piculs sugar (equal respectively to 89.12 and 10.70 tons per H.A.) were obtained.

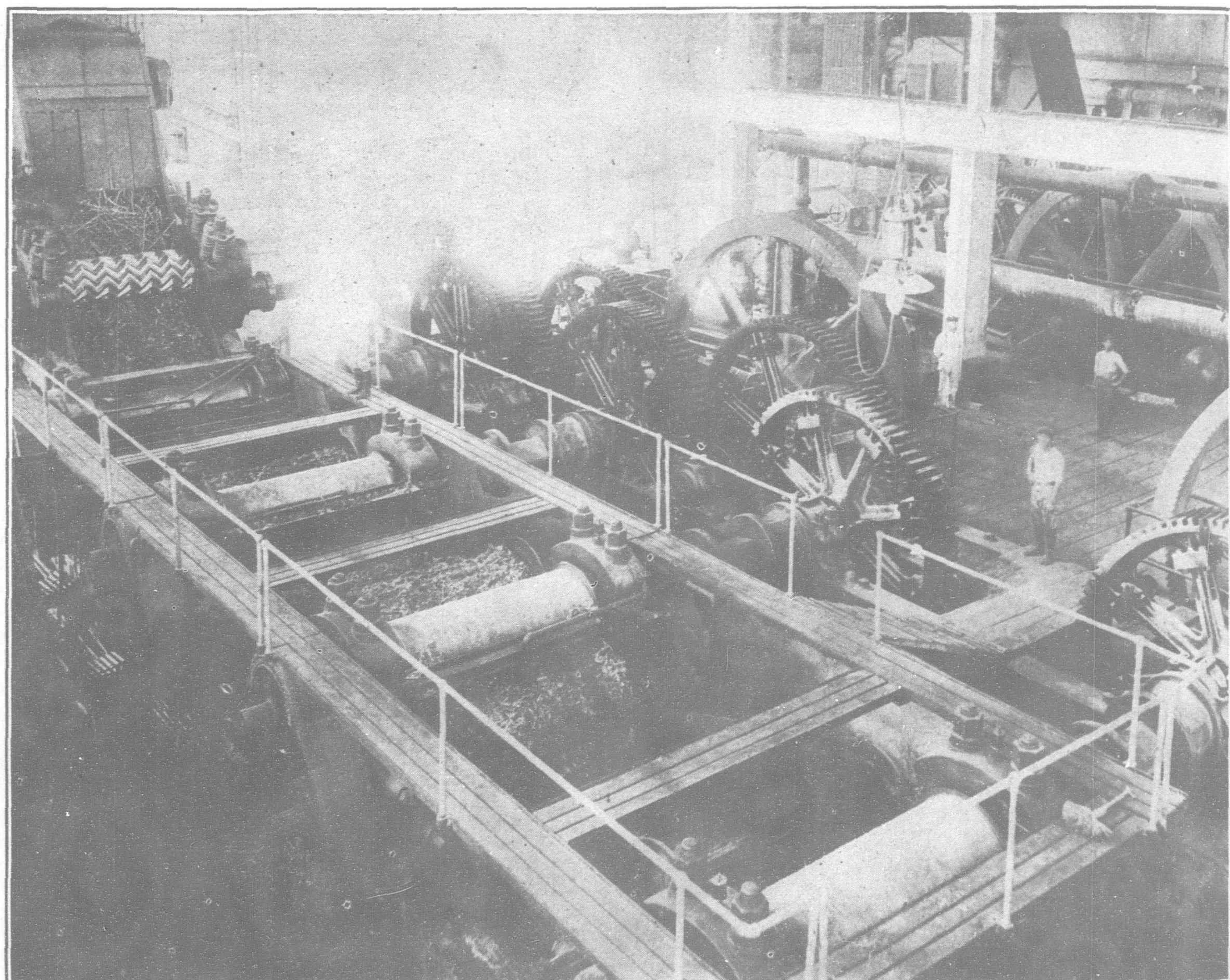
The average rendition during last June amounted to 11.98.

FAREWELL TO COMMERCIAL SECRETARY ROSE.—Upwards of seventy guests attended the farewell tiffin to Mr. A. Rose, C.I.E.,

British Commercial Secretary, at the Grand Hotel des Wagons Lits, February 18. Mr. A. C. Henning, chairman of the British Chamber of Commerce, was in the chair. Among those present were Sir Beilby Alston, Sir Frances Aglen, Bishop Norris, and Messrs. Clive, Bowra, Barton, Barson, Hubbard and representatives of all the leading firms in Peking.

CANTON RAILWAY EMPLOYS WOMEN.—More than thirty Cantonese women have entered the employ of the Canton-Samshui Railway, four of them as secretaries and the remainder as ticket-collectors and inspectors. Other companies, including the Telephone Exchange, are, it is understood, conceding the demands of the Women's Union for the employment of women and girls on equal terms with men.

Sales of the Tobacco Products Export Corporation in China have increased 300 per cent. per month over the business done at the start of the current year. Plans are being laid for a further increase in 1921 and on the basis of these plans it is expected that sales by the close of next year will be running close to 1,000 per cent over those in January and February of this year. So elaborate are the plans for expansion in China that it has been decided to have one of the leading offices of the company make a trip to the Orient and personally take charge of the company's operations there. This man will sail for China next month and will remain several months on the ground.—*The Wall Street Journal.*



Nine Roller Mill and Crusher in the Ako Central Factory of the Taiwan Sugar Company.

Radio Compasses or Direction Finders in Modern War

THAT the late war brought about developments along the lines of engineering and communication which in peace times might have taken years to develop is now well known to all the world. That most of these developments where they relate to radio apparatus for radio telegraph and radio telephone communication are now made available to the commercial user and to governments of foreign countries is due to the WIRELESS IMPROVEMENT COMPANY of NEW YORK, U. S. A., who, during the war and since the declaration of peace, has been one of the largest manufacturers of radio apparatus in the United States.

Among the many devices, which this Company is now accepting orders for, are the radio direction-finder systems or radio compasses, which were perfected through the combined efforts of the allied engineers and which became such an important factor in fleet, submarine and aircraft warfare. As soon as it had been determined that these direction finders could be relied upon, the United States navy department adopted them and the necessary installations were made along the Atlantic coast line to enable the immediate locating of any enemy submarine, who might attempt to cross to United States waters. Navy vessels were also equipped. Great Britain also installed the radio compasses as did also France and Italy. Unfortunately for the allies, the German armies as well as their submarines also installed these devices, making it necessary for allied vessels to be extremely cautious in the transmission of messages, to prevent the submarine from obtaining their position. That the time is already here when the merchant marine as well as the naval and military

arms of the governments of the world must install these radio compasses or be hopelessly left behind in the series of rapid developments which are taking place among the great nations, can now plainly be seen by anyone familiar with conditions.

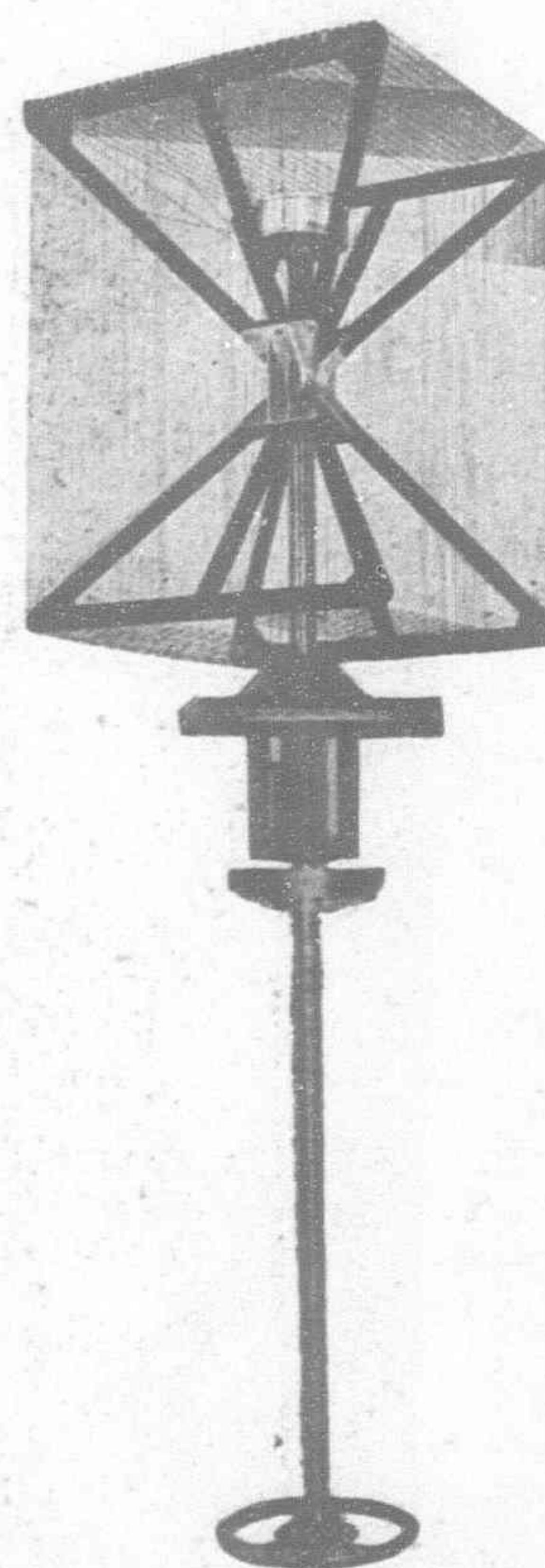
The advance of science and engineering is by leaps and bounds, and that which had never been heard of until yesterday becomes the practical necessity of to-morrow. The operation of the radio compass, that is to say, its ability to determine the direction from which radio waves are coming can be easily described. A transmitting station radiates energy equally well in all directions. A receiving station employing a regular antenna (consisting, for example, of a number of elevated horizontal wires) picks up energy equally well from all directions. But if a closed loop is used in place of the receiving antenna, the sensitiveness is not the same in all directions. The exact conditions then are as follows:

When the plane of the winding of the radio compass loop is in direct line with the transmitting station, the compass loop is

most efficient and picks up a maximum amount of energy from the transmitter. As the coil is rotated its efficiency diminishes, and when the plane of the coil is at right angles to the direction of the transmitting station, the coil efficiency is a minimum and no energy is absorbed from the transmitter.

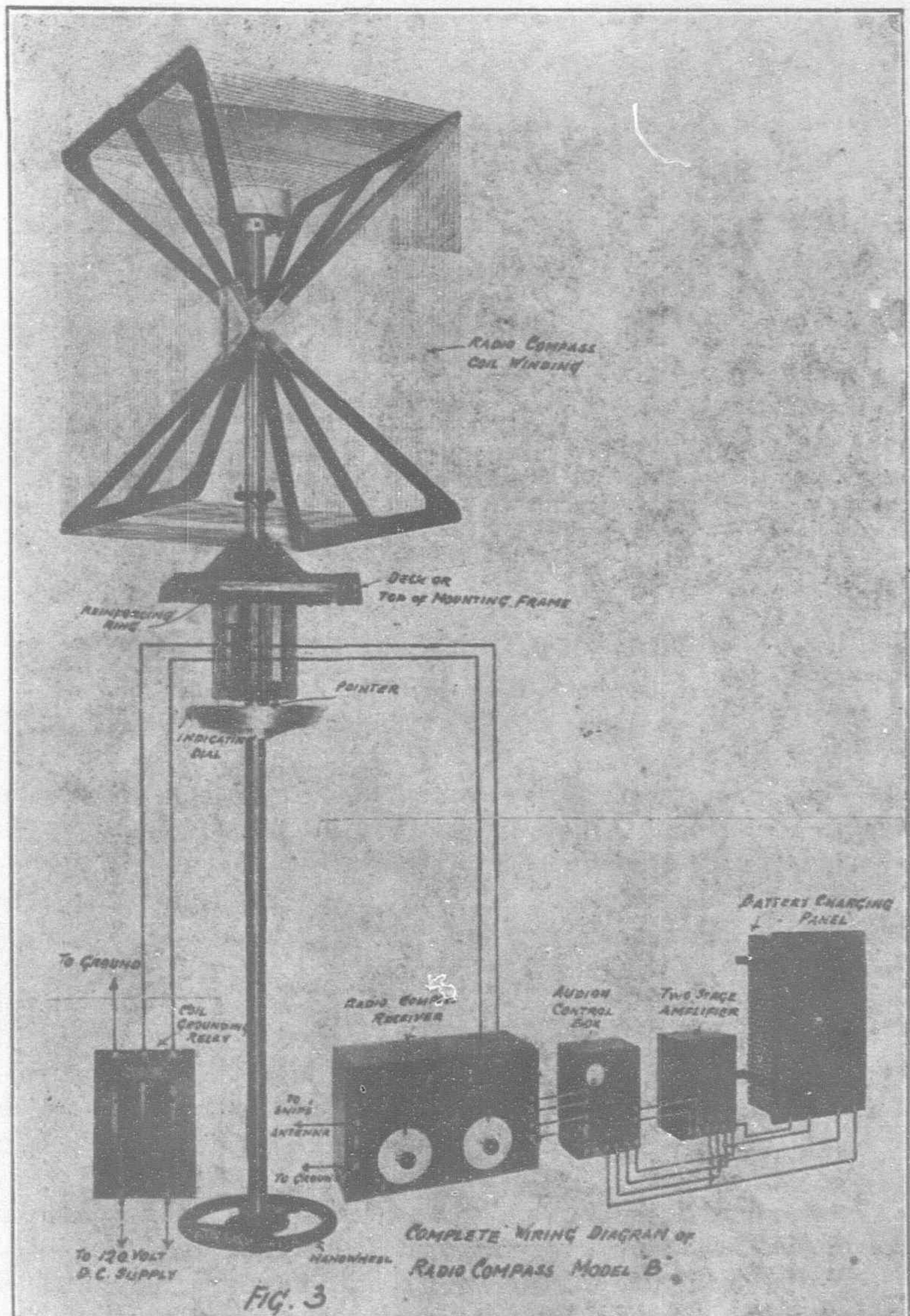
The application of this principle is the basis of the radio compass or direction-finder. The radio compass coil is connected with a receiving set and with a multi-stage amplifier (for increasing the strength of all received signals). The compass coil is then "tuned" to the transmitter and the coil is rotated until the signal intensity increases to a maximum. This occurs when the plane of the radio compass coil is in line with the direction of the transmitter.

A dial, calibrated in 360° is usually attached to the shaft of the radio compass coil. The direction of the transmitter is "read" on the dial, the zero setting of which is usually adjusted either to true north or to the centre line of the ship, depending upon whether the radio compass set is installed on land or on board ship. That events of great importance in the late war were materially affected by results obtained from radio compass stations is not generally



RADIO COMPASS COIL

(By revolving this coil the signal direction is determined. It is connected by wires to the Compass Receiver).

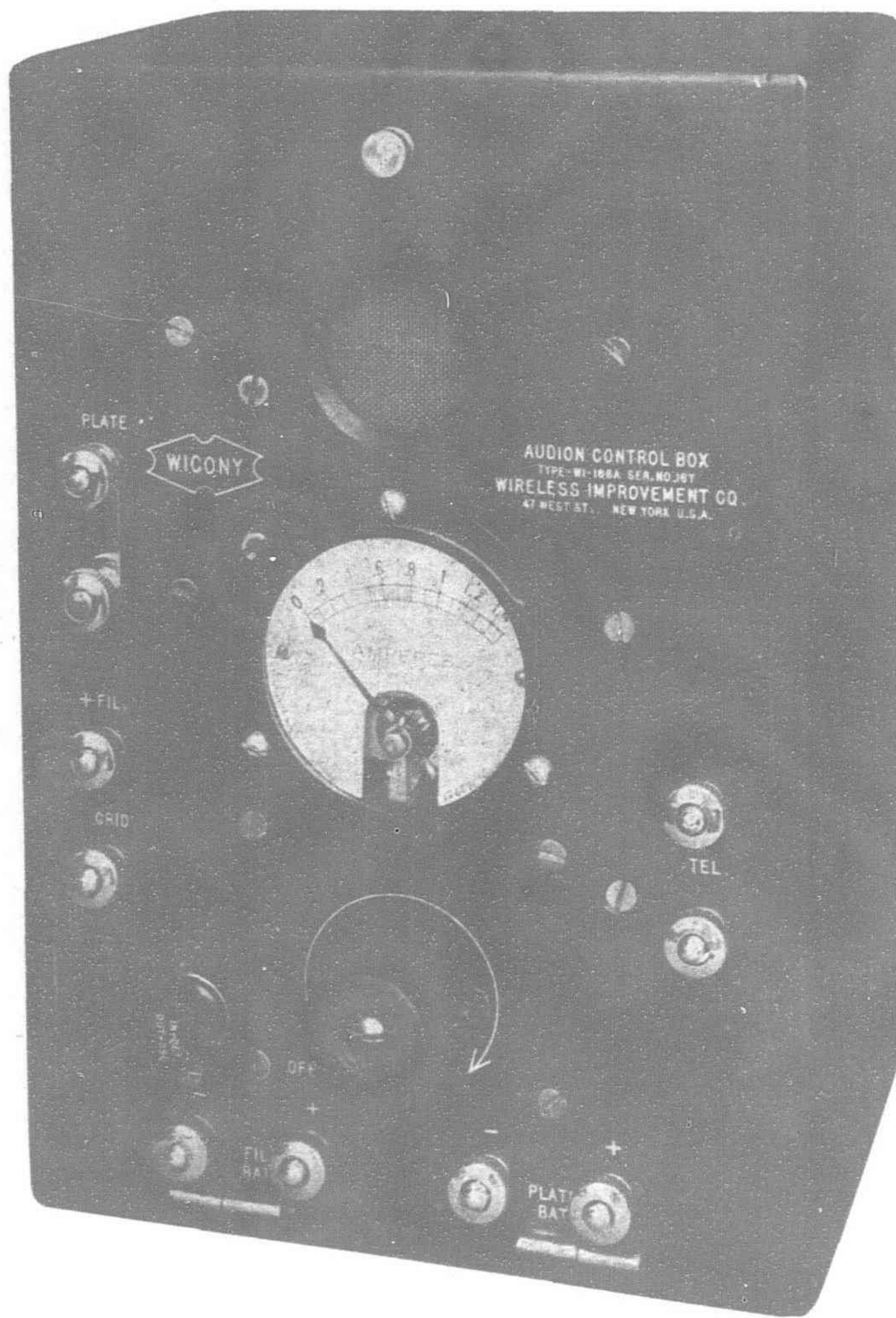


known even now. Of course, during the war, great secrecy was maintained as to its operations. That no less a world-important engagement than the battle of Jutland was brought about through the ability of this "Wireless Eye" of the British navy to keep track of the German grand fleet may surprise and at the same time indicate to the engineers of other governments the importance and reliability attached to the operation of this device by the greatest sea power in the world.

In discussing a paper by Captain H. J. Round, printed by the Journal of the Institution of Electrical Engineers, March 1920, Sir N. B. Jackson, Admiral of the British fleet, said in part :

"The author states that the extent to which direction-finding was trusted by the authorities was really remarkable, and he instances a most important event in the history of the British navy

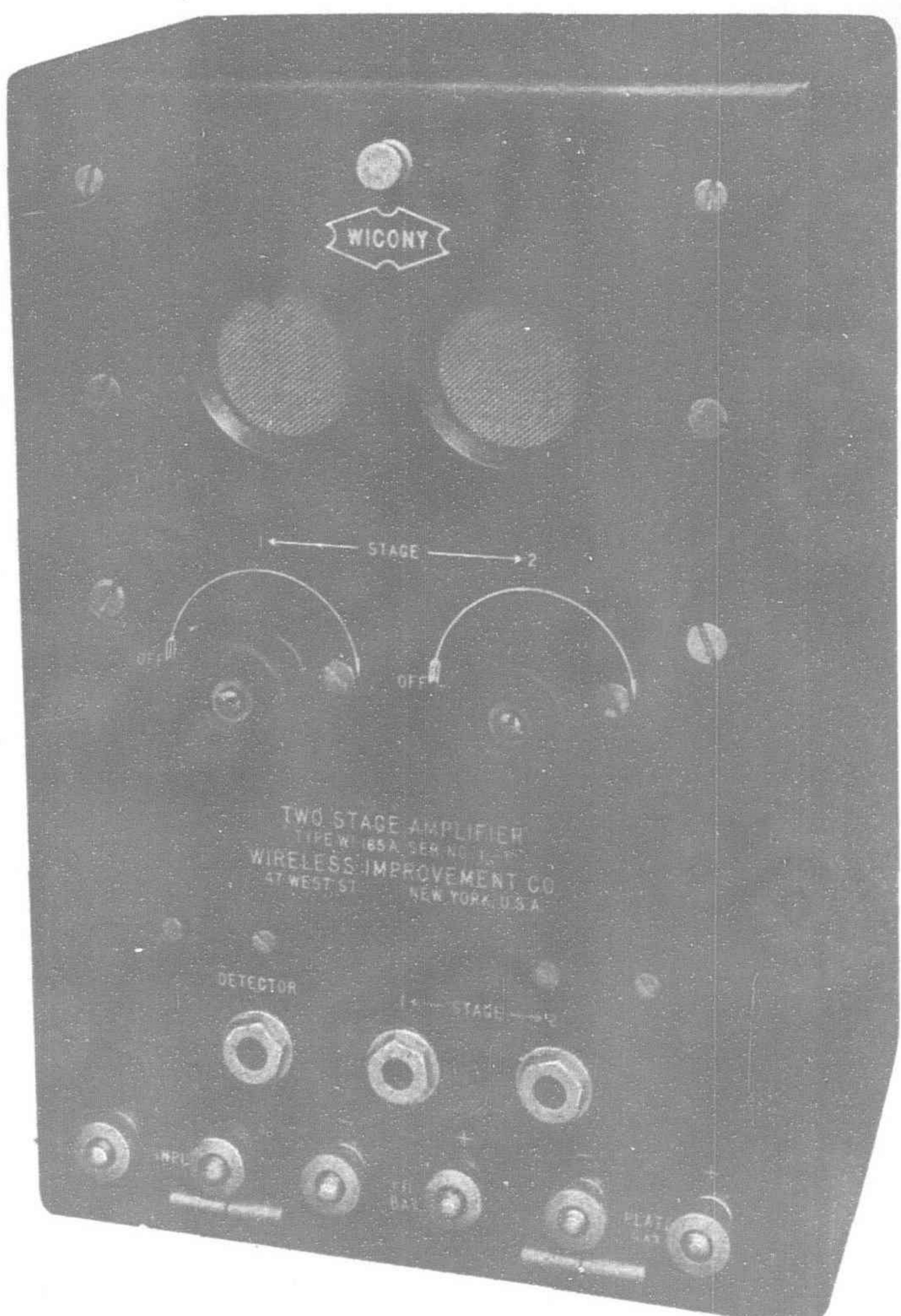
off such a meeting. Our wireless direction-finding stations, under Captain Round, kept careful and very intelligent watch on the positions of German ships using wireless, and on the 30th of May, 1916, heard an unusual amount of wireless signals from one of the enemy ships which they located at Wilhelmshaven. This was reported to me ; the time was a critical and anxious one in the war and I had also some reasons for expecting that the German fleet might put out to sea during the week. Our fleet was ready at short notice and had arranged, unless otherwise prevented, to put to sea on the following day for a sweep of the North Sea. But if the German fleet got to sea first, the chance of a meeting in waters not unfavorable to us was remote ; our object was to try to get to sea before or shortly after the Germans, and hitherto we had not succeeded in doing so. Later on in the afternoon, it was reported to me that the German ship conducting the wireless had changed



AUDION CONTROL BOX

(Contains the Audion Detector and its control mechanism.
Detects the signal and transfers it to the Amplifier).

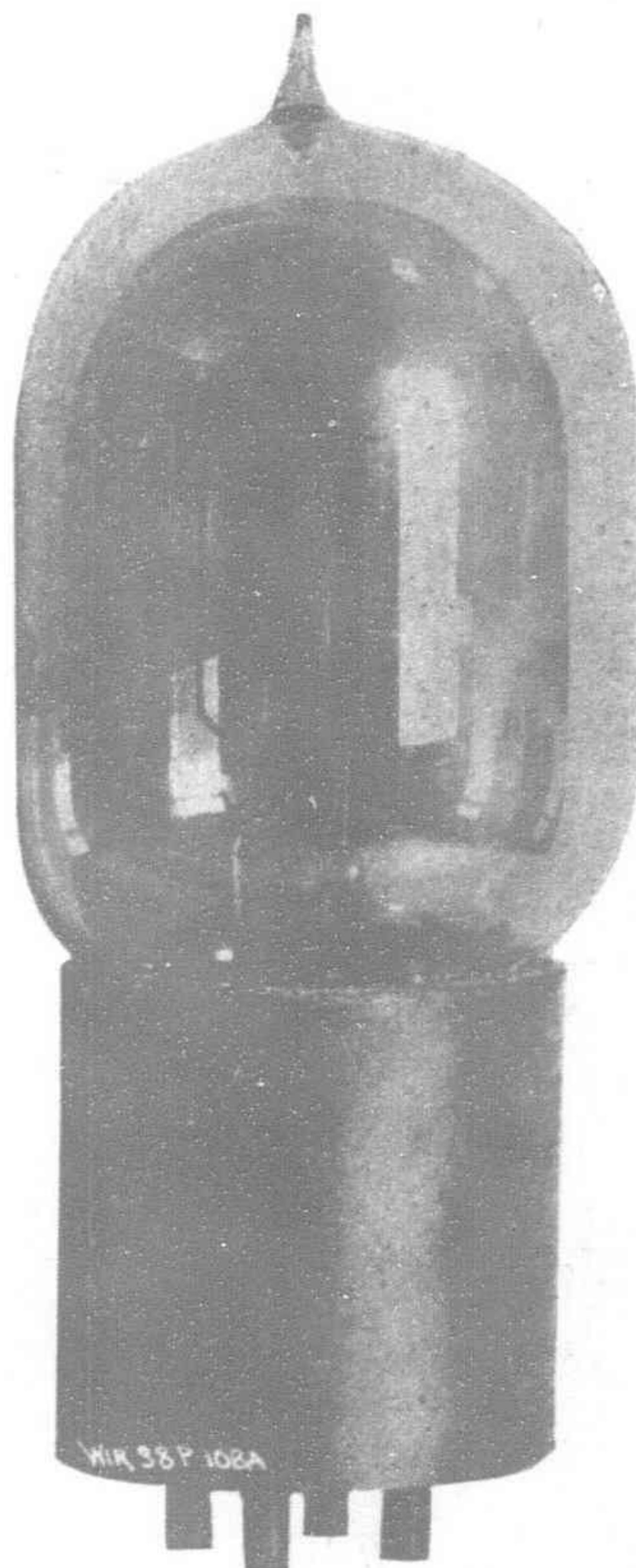
brought about by an observed motion of less than $1\frac{1}{2}$ degrees in the daytime. I think I may say we trusted him and his methods because we soon found them to be reliable. The trouble and intelligence of his staff reduced the errors to a minimum, and where strategical movements were under consideration a few miles of error in the North Sea was of secondary importance. I think it may be of interest if I give a few particulars about the case quoted in his paper, as it is really known to very few. We have heard much about the use of direction-finding for minor tactical movements of all arms, but this is a case of a major strategical operation which brought about the historical meeting of the British and German fleets at the battle of Jutland on the 31st of May, 1916. I was First Sea Lord at the time and so was responsible for the disposition of the grand fleet. I may incidentally mention that, in spite of other statements of which I have heard, its commander-in-chief (Lord Jellicoe) and I lived, so to speak, with the object of bringing



TWO STAGE AMPLIFIER

her position a few miles to the northward. Evidently she and her consorts had left the basins at Wilhelmshaven and had taken up a position in the Jade River ready to put to sea. This movement decided me to send our grand fleet to sea, and move towards the German bight at once and try to meet the German fleet and bring it to action. This they did with their usual promptitude, and the result was the famous battle of Jutland, and it was indirectly brought about by the careful and accurate work of Captain Round and his staff, for which I hope they will now accept my belated thanks and appreciation. Their work is not ended. Direction-finding has come to stay for more general use in peace. Errors are being eliminated and there should be a great future before it, especially on the lines indicated in the press to-day by the admiralty for assisting navigation at sea as well as in the air."

That the next war will depend even to a greater extent on radio direction-finders than did the last one goes without ques-



VACUUM TUBE DETECTOR

(Called the Audion. Is used in the Detector and Amplifier Box and both detects and amplifies the signals so they may be heard).

not been developed and made practical prior to the war. Most of these developments had been kept secret so far as possible between the allied nations. The necessity for secrecy having ended with the war, the Wireless Improvement Company determined as far as possible to make these developments available to commercial interests and foreign governments. Even now it is necessary to make the sale of many of these new devices subject to the approval of the United States navy or war department. However, only in a very few cases do these departments refuse to grant permission, as the officers of these departments realize the benefits which will accrue to humanity through the adoption in peace times of the scientific developments which were brought about through the exigencies of war."

Big Decline in Japanese Toy Exports

AT THE outbreak of the war, Japanese exports of celluloid toys became exceedingly brisk, but now that peace is restored the export of the articles has entirely stopped with the result that about seven million yen worth of the toys and material for their manufacture are now in warehouses. In this connection, an official in charge of the inspection of Japanese celluloid goods for export is quoted as making the following remarks: The celluloid goods exported abroad consists of toys and combs. The great decline in the export of toys is attributed to the fact that the Japan-made articles can hardly compete with foreign goods in point of quality and price, the material being higher in Japan than in foreign countries. This being the case no new orders have lately been received in Japan from foreign countries, with the exception of Australia.

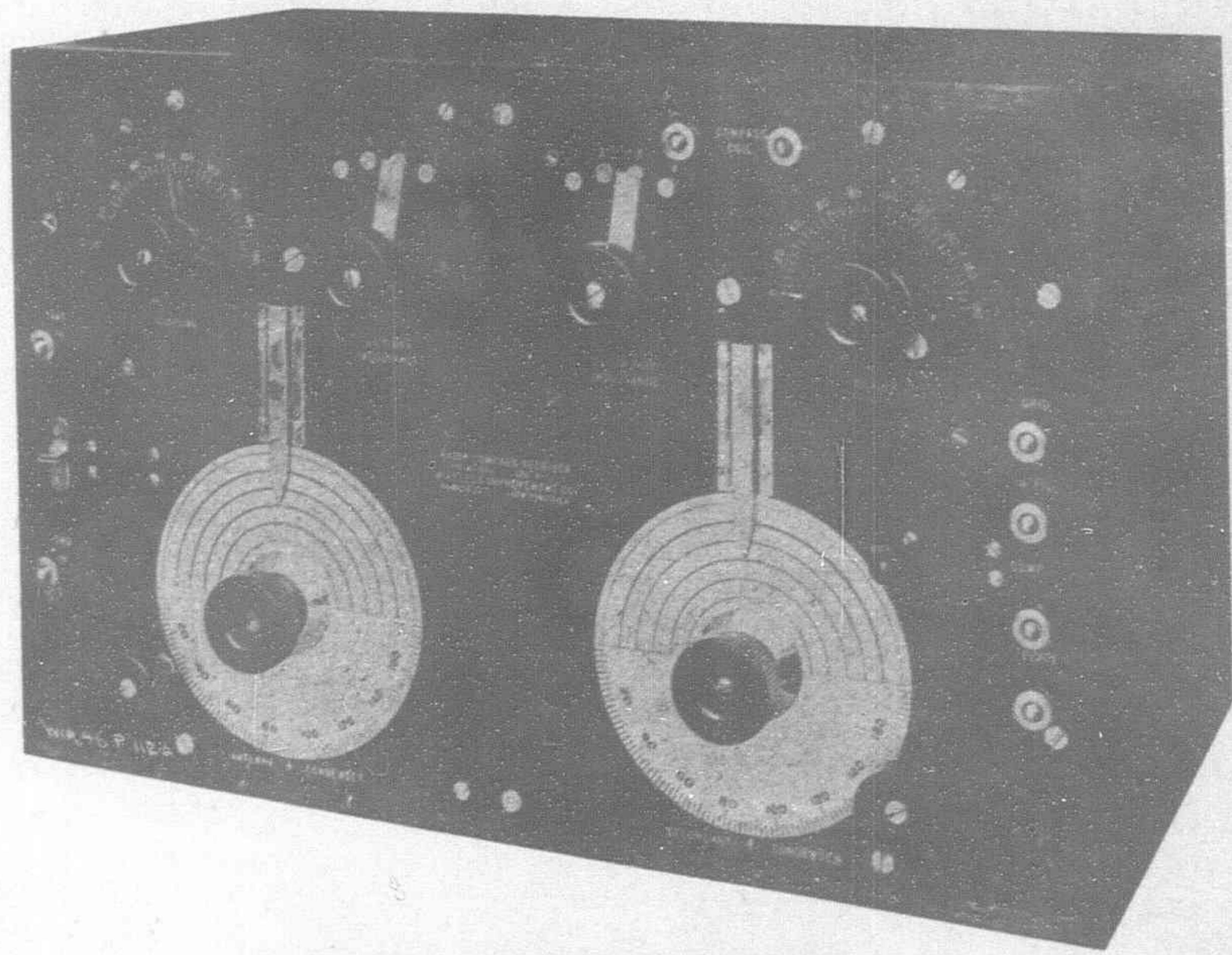
AMERICAN LOCOMOTIVES FOR F.M.S. RAILWAYS.—Consul H. J. Dickinson reports from Singapore, Straits Settlements, that orders have recently been placed in the United States for 20

tion. Now that it has been proven that they will operate with great usefulness and accuracy, the nations desiring to be up-to-date will, of course, install them, not only because they have become essential in times of war but also because they are extremely useful in times of peace. Wherever aircraft is used the direction-finder will soon be found to guide the aircraft. Sea-going vessels will use them as an aid to navigation while the military arms of governments find them essential for many purposes.

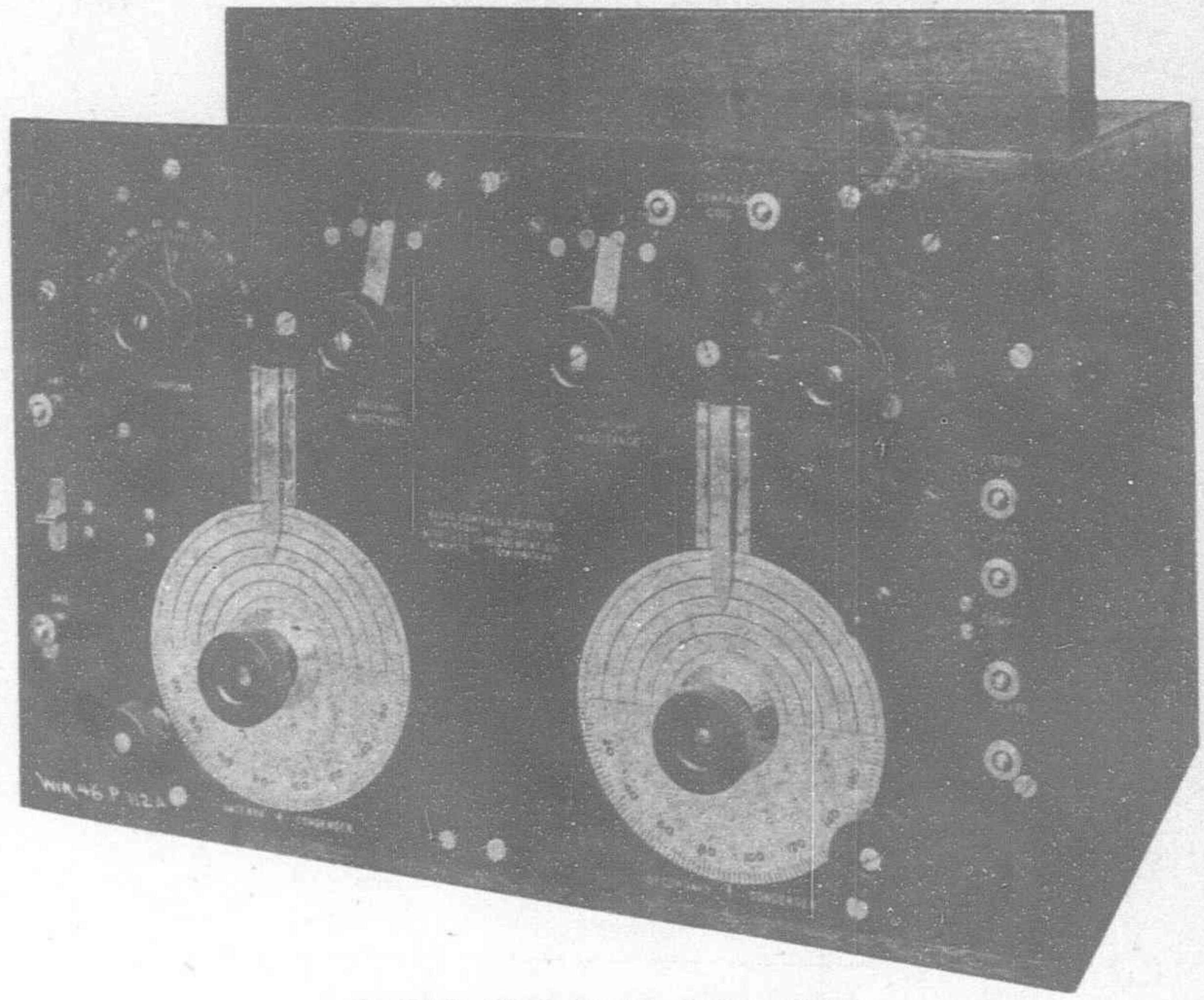
The engineers of the WIRELESS IMPROVEMENT COMPANY have designed these direction-finders in various forms, most suitable for land marine and aircraft installation depending upon the uses to which they will be put.

Speaking of this work—Mr. R. E. Thompson, chief engineer of the Wireless Improvement Company, says:

"When the war ended, there existed many systems and devices for use in radio communication which had not existed—or had



RAIDO COMPASS RECEIVER,
Type WI-153A



RADIO COMPASS RECEIVER

(This instrument is used to tune the coil to the wave length of the incoming signal. The receiver is, in turn, connected to the Audion Detector Box).

American-made locomotives for use on the Federated Malay States Railways, their use in the past having given every satisfaction. Ten of these locomotives will be delivered at Penang and 10 at Singapore.

SUZUKI & Co. INCREASE CAPITAL.—Suzuki & Co. has increased its capitalization from 500,000 yen, to 50,000,000 yen.

The Suzuki firm's assets exceed \$250,000,000, and for years its small capitalization has been one of the unusual features of the world of international trade and commerce. The firm is owned by Madame Suzuki, who built it up from an enterprise of a few million dollars in assets to a gigantic enterprise with assets that place it among the most powerful institutions of the world. The firm remains a copartnership, with Madame Suzuki in full control, as heretofore.

Besides great fleets of ocean steamships, the firm owns banks, breweries, distilleries, manufacturing plants, immense agricultural enterprises, steel plants, shipbuilding plants and many other enterprises.

SHANTUNG FACTORIES AND WORKSHOPS WITHIN JAPANESE JURISDICTION

The following complete list of factories and workshops within the Japanese jurisdiction in Shantung furnishes convincing testimony in support of the revelations made in the February number of THE FAR EASTERN REVIEW

Name	Location	Proprietor	Industry	Capital	Area of site	Building space	Power	Employees
Nikka-Sanshi Co.	Wakazuru Str.	Nikka Sanshi Co.	Silk filature	G.Y. 2,500,000	sq. tsubo 17,900	cub. tsubo 3,034	Electric. 25 H.P.	Jap. & Chi. 1,000
Seito Shishyo Towa Co.	2 chyome	S. Miyake	Oil extracting and refinery and peanut grading	„ 1,000,000	6,941	1,135	87.5 „	Jap. 52, Chi. Male 200, Female 200
Toyo-Seiyu Co.	„	The Co.	„	„ 800,000	6,962	1,086	35 „ 18 „	120
Santo-Yubo	„	T. Hayashi, Director. Manag. Santo-Seiyu Co.	„	„ 1,000,000	13,880	594	120 „	100
Mitsui-Yubo	„	Mitsui Bussan Kaisha	Peanuts grading and oil, tallow refining	Head office furnishes	4,920	785	3.5 „	300
Seito-Seiyu	Ohkawa Str.	Seito-Seiyu Co.	Recasing, peanut and other vegetable oil	„ 1,000,000	1,170	325	Steam	—
Suzuki Co	No. 14 Sanjyo Str.	The Co.	Oil refining	—	2,200	625	15 H.P.	—
Yoshizawa-Yubo	No. 9 Sakai Str.	K. Yoshizawa	Veget. oil refining	As above	1,777	500	—	72
Minemura Yubo	Hazakura Str.	S. Minemura	Oil refining and cotton pressing	S.Y. 500,000	1,725	429	15 H.P.	25
Shinri Yubo	2 chyome. Wakazuru Str.	Shinri Co.	Oil, tallow refining	„ 50,000	765	161	10 „	Jap. 2 & Chi. 87 15
Yuasa Yoko	Hazakura Str.	T. Yuasa	Oil refining and cotton pressing	G.Y. 5,000,000	3,900	143	114 „	
Tairi Shyokai	Hayagiri Str.	M. Matsuzaki	Oil refining, etc.	„ 80,000	1,375 sq. mt. and 162 sq. tsubo 5,667	130	8 „	30
Seito-Seifun Co.	Mikazuki Str. Taitung chen	The Co.	Flour mill	„ 500,000		1,438	Electric 275 H.P.	72
Santo-Hatabako Co.	Shiba Str.	K. Ito	Redrying of tobacco leaf	„ 500,000	3,020	366	45 „	92
Toho Koshi	Hayagiri Str.	Y. Fukuda	Work upon waste tobacco leaf	„ 300,000	400	300	7.5 „	40
Dairen Seihyo Co.	Mikazuki Str.	The Co.	Ice manuf't. cold-plant, table water	„ 500,000	1,074	357	63 „	62
Seito-Engyo Co.	Hayagiri Str.	The Co.	Salt grinding and refining	„ 1,000,000	2,336	1,630	24 „	125
Santo-Kagakukogyo Co.	2 chyome. Wakazuru Str.	S. Isono	Tallow	„ 100,000	2,471	208	Steam 26 H.P. Electric 5 H.P.	Jap. 5 & Chi. 300
Nagase Yoko	„	The Co.	Peanut oil refining and grading	„ 6,000,000	3,290	307	20 Steam 9 H.P.	
Nisshi Tampun Co.	Hayagiri Str.	T. Ishibashi	Egg factory	„ 500,000	1,500	435	15 „	167
Taisei Koshi	Sakai Str.	T. Arai	„	„ 160,000	1,161	633	175 „	296

Name	Location	Proprietor	Industry	Capital	Area of site	Building space	Power	Employees
Santo Seijiku Co.	2 chyome, Wakazuru Str.	K. Nakamura	Match sticks only	S.Y. 100,000	sq. tsubo 4,529	cub. tsubo 366	15 H.P.	Chi. 120 and Jap. 5
Wada Seizaisho.	"	M. Wada	Sawmill	G.Y. 250,000	3,270	630	150 "	98
Santo Kashi Co.	Taitung chen	K. Kobayashi	Matches	,, 1,000,000	4,200	1,350	20 "	662
Tohro Match Co.	"	"	"	"	4,900	1,230	5 "	720
Seito-Match Co.	Taitung chen	The Co.	Matches	,, 300,000	4,485	1,654	10 "	750
Chyuka-Shyokufu Co.	2 chyome, Wakazuru Str.	The Co.	Weaving	,, 500,000	672	325	40 "	
Seito Hariseizo Co.	Tsuboi Str.	The Co.	Glassware	,, 500,000	300	109	—	Jap. 50 and Chi. 65
Dainippon Beer Co.	Inui Dohri.	The Co.	Brewery	"	34,765	1,600	50 H.P.	138
Santo-Membo Co.	Aoyagi Str.	T. Yao.	Cotton thread and yarn	,, 250,000	1,000	240	7,5 "	100
Santo-Kasei Co.	Taishi chen	K. Kaneko	Bone power and glue	S.Y. 100,000	2,380	141	10 "	11
Meiji-Seikaku Co.	"	The Co.	Hides, tanning and preserving	G.Y. 2,000,000	16,000	60	—	15
Tokuseiyoko	"	K. Ishi-i	Tanning, dealing	,, 200,000	550	300	10 "	66
Shinjyo-Shyoten.	Taishi Dori	C. Shinjyo	Beef	" 100,000	120	110	—	10
Naniwa Seiyu Co.	"	Y. Fukui	Bean oil refining and extracting	Furnished by Head Office	1,400	100	—	20
Takahashi-Genen-Fun-sai Co.	Taishi chen North Strand	U. Takahashi	Salt, grinding	G.Y. 150,000	3,500	200	10 "	45
Seito-Shyoyu Co.	Miyama Str.	The Co.	Cereals, soya	,, 500,000	300	200	—	38
Seito Somemono Co.	Daikoku Str.	The Co.	Dyeing	,, 200,000	120	67	—	25
Seito-Kamaboko Seizo Co.	"	The Co.	Kamaboko (a kind of food from fish)	,, 50,000	15	15	—	13
Toyo-Shokusan Co.	Litsuen	The Co.	Knitting and panama hats	,, 100,000	1,000	100	—	240
Seito-Shimpo-Printing Department	Shizuoka Str.	T. Kido-o	Printing and paper	"	650	505	11 H.P.	150
Toyo-Insatsu Sho	Uusen Str.	I. Masaki	General printing and bookbinding	G.Y. 50,000	90	70	7 Printing machines	35
Uchida Yoko's Printing Department	Koto Str.	K. Uchida	"	,, 10,000	35	30	3 "	12
Dojingo	Santo Str.	T. Yorimoto	"	,, 50,000	50	50	6 "	50
Shinshyo-Yoko	Hiroshima Str.	N. Tsuge	Soap and candles	S.Y. 60,000	1,224	400	5 H.P.	125
Marubishi Co.	Shizuoka Str.	T. Nomura	Ironwork	G.Y. 300,000	651	267	5 "	42
Todo Shyokai	Wakazuru Str. 2 chyome	K. Toda	"	,, 150,000	720	300	10 "	24
Tentoku Tekko Co.	Wakazuru Str. 2 chyome	R. Takahashi	Ironwork and casting	,, 300,000	3,215	227	7.5 "	76
Hosei Konsu	Hayagiri Str.	T. Okamoto	Ironwork	S.Y. 100,000	800	300	25 "	Jap. 13 and Chi. 200
Horimuki Tekko Co.	"	K. Horimuki	"	,, 10,000	50	50	—	50
Otsuka Tekko Co.	"	K. Otsuka	"	,, 10,000	50	30	—	20
Shyoji Tekko Co.	"	E. Shyoji	"	G.Y. 5,000	10	10	—	20
Udaka Tekko Co., Taito Koshi	Wakazuru Str. 2 chyome	M. Udaka	"	,, 10,000	100	65	—	18
Kagusesaku Co.	Saiwai Str.	E. Ito	Foreign and Japanese furniture	,, 30,000	280	100	—	42
Yutaigo Co.	Santo Str.	S. Sugitani	As above	" 40,000	350	200	—	20
Mori Wayokagu Co.	Saga Str.	S. Mori	Furniture making	S.Y. 30,000	170	100	—	70
Nomura Yoko	Ichibacho	S. Nomura	"	G.Y. 20,000	36	36	—	15
Ippongi Co.	Aizuru Str.	C. Ippongi	"	,, 50,000	210	105	—	80
Ikeda Kagu Co.	Tenshin Str.	S. Ikeda	"	,, 8,000	60	39	—	14
Kawaguchi Co.	Taiko Str.	Y. Kawaguchi	"	,, 2,500	30	30	—	20
Mikado Garage	Hijiyama Str.	The Co.	Motor "hire service and repair	,, 800,000	338	251	5 H.P.	15
Seito-Insatsu Co.	Lison Str.	S. Yamashita	General printing	,, 100,000	60	50	—	Jap. 8 and Chi. 35
Nikka Sharyo Co.	Hijiyama Str.	The Co.	Ricksha garage and manuf't., repair	,, 200,000	510	300	—	52
Nakamuragumi Salt Washing Co.	Water Seito Brake Harbour	"	Salt washing and grinding	S.Y. 100,000	2,988	228	35 H.P.	Jap. 4 and Chi. 65

Name	Location	Proprietor	Industry	Capital	Area of site	Building Space	Power	Employees
Seito Engyo Co.	Water Brake Seito Harbour Ohkawa Str. Tanzan	The Co. K. Hiwasa The Co.	Salt washing and grinding Peanut grading, etc. Mineral waters	G.Y. 100,000 " 150,000 " 1,500,000	sq. tsubo 626 6,167 2,096	cub. tsubo 380 243 334	8 H.P. 5 "	53 450 Jap. 8 and Chi. 10 20
Biron Kogyo Co.	Miyama Str. Inuidore. Tai-tung chen	" "	Furniture Manufacturing miso soy, etc.	" 500,000 " 100,000	186 1,000	36 82	—	—
Tsingtauya Co.	Tokorozawa Str. Uuson Str. Miyamae Str. Pekin Str. Wakazuru Str. 2 chyome Sainan Str. Wakazuru Str. 2 chyome Nishi Gokason Chyuka ai Taitochin Road & Shiho Road corner	" S. Yamaguchi H. Haizuka S. Tanaka K. Nishio M. Aoyamo H. Tsukada	Shoes and bags Sake Canned meats, etc. Flour mill Tiles Bricks Match boxes	" 100,000 " 50,000 " 50,000 " 7,000 " 50,000 S.Y. 30,000 " 3,000 " 3,000 " 3,000 G.Y. 20,000	28 70 24 50 In Tentoku Iron Factory 72 85 200	28 60 24 50 72 85 80	— — — — 5 H.P. —	18 5 5 12 Jap. 9 and Chi. 20 20 20
Seito Seshu Jyozo Co.								50
Santo Seishu Jyozo Co.								50
Santo Kanzume Co.								18
Haizuka Seifun Co.								5
Tanaka Yokaiga Co.								5
Kenzaisha Seiga Co.								5
Aoyama Renga Co.								12
Tsukada Yoko								20
Asahi Renga Co.	Nishi Gokason	K. Nishio	Bricks	S.Y. 10,000	2,500	30	—	—
Muramoto Renga Co.	Taitochin	S. Muramoto	Bricks	" 2,000	1,500	25	—	36
Asahi Renga Co.	Chyu ai	K. Nishio	Bricks	" 6,000	3,000	15	—	51
Jungosei	Shyosonshyo	T. Fujiki	(by hand)	" 2,000	3,010	22	—	46
Tokuda gumi	"	K. Tokuda	Shimoshiho	" 2,000	2,970	22	—	59
Ota Yoko	Shimoshiho	T. Ota	Shihoson, S. (Yellow Island)	G.Y. 3,000	3,000	20	—	52
Oshiro Yoko	Shihoson, S. (Yellow Island)	T. Tsushiro	Koto	G.Y. 3,000	4,005	35	—	56
Koto Renga Co.	Koto	T. Hirayama	Bricks and tiles	S.Y. 20,000	15,000	1,100	—	32
Seito Seikan Co.	Taitungchin	G. Miyamoto	Manuf't. can	G.Y. 500,000	4,000	600	—	300
Okura Gyushi Co.	Taiseichin	T. Ishibashi	Salting hides	S.Y. 300,000	—	120	—	Jap. 4 and Chi. 4
Ishin Kagaku Kogeisha	"	K. Kojima	Dye manufacturing	" 2,000	—	60	—	15
Katei Koshi	Taitochin	T. Matsumami	Soap	" 5,000	—	130	—	16
Hojo Yoko	Taitunchen	K. Imachi	Japanese sake mf't.	G.Y. 15,000	—	160	—	8
Taishin Yoko								8
Imono Co.	Sanjyo Str.	E. Ishida	Casting	S.Y. 50,000	—	300	—	—
Kutama Tekko Co.	Hayagiri Str.	K. Saegi	Ironwork	G.Y. 10,000	—	30	—	43
Tobayoko Tekko Co.	Miyama Str.	T. Tokiwa	Iron ware for mine, water supply	" 300,000	—	30	—	23
Watanabe Mokko Co.	Chokurei Str.	K. Watanabe	Manuf't. furniture	" 3,000	—	50	—	30
Kawaguchi Mokko Co.	Taku Str.	Y. Kawaguchi	House furnishing	" 10,000	—	60	—	23
Yamaguchi Seiga Co.	Sainan Str. (Yellow Island)	T. Yamaguchi	Tile	S.Y. 20,000	—	90	—	30
Santo Renga Co.	Koto	T. Hirayama	Bricks and tiles	" 10,000	—	100	—	22
Takahashi Koppun Co.	Shiho	U. Takahashi	Bone powder, oil extract, etc.	G.Y. 2,000	—	400	—	130
Ryudai Koshi Co.	Taiseichin	S. Homma	Tallow	" 50,000	—	126	—	25
Koto Yoko	Koshyu Str.	T. Tokushige	Table waters	S.Y. 35,000	—	80	—	6
Seito Kanzume Seizo Co.	Sainan Str. Wakazura Str. Soko	T. Hino S. Yamada K. Fujisawa	Canning Cans Face paints	G.Y. 100,000 " 500,000 " 12,000	—	—	—	14
Seto Seikan Co.								—
Sanye Shyokai Soko Co.								15

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	No. of workers
Tokusei Ei Imono Co.	Hayagiri Str.	Nin Shi Ko	Casting	S.Y. 1,000	sq. mt. 72	cub. tsubo 30	—	20
Kashyo Go	Tenshin Str.	Zui Ki Rin	Machinery	„ 20,000	sq. tsubo 42	42	Petroleum 9 H.P.	24
Yuchyo Shyoen	Chiifu Str.	Sha u Kyo	Soya, miso, pickles, etc.	„ 10,000	sq. mt. 3,600	cub. mt. 3,540	—	19
Dowa Shyo En	Hiroshima Str.	Chin Hei Tai	„ „	„ 10,000	900	300	—	9
Kashin Yo Shyo	Higashigokason	Chyo Den Shin	Bricks	„ 3,000	(Chinese way) 3 se	12	—	57
Detoku Yoshyo	Chyu Ka Ai S.	Den Ka Sai	„	„ 2,000	2.5 „	9	—	35
Chuwa Koshi	Taitochin Tamare 7 Chome	Jyoseishyo	Lacquer	„ 2,000	sq. tsubo 200	60	—	16
Dogen Yu	Taitochin	Kaku Shi Ko	Dyer	„ 1,000	250	72	—	18
Wa Ko Yu	„	O Fu Sai	„	„ 51,000	100	30	—	20
To Sei Sai	„	Ri Shyo Shun	„	copper 2,500	chao 150	50	—	15
Fu Ho Wa	„	Ri Jun Sei	„	S.Y. 800	120	40	—	13
Fuku Wa Ko	„	O Ki En	„	„ 500	150	30	—	14
Gen Yo Ko	„	Yo Sei Kun	Strong sake	„ 4,000	256	50	—	16
Gitai Shyo	„	Gyu Seki Chin	„	„ 4,000	120	30	—	11
Eijun Tetsu Shyo	„	Den Den Toku	Casting	„ 4,000	120	100	—	23
So Sei Tetsu Shyo	„	Bo Ho Shun	„	„ 800	100	35	—	11
Chu Ji Go	„	Chyo Chyu Tei	Straw rope	„ 1,000	200	30	—	10
Fuku Wa Shyo	Shyo Son	Jyo Chu Shu	Bricks	„ 1,000	1.5 se	10	—	31
Toku Shu Sei	Chyu Ka Ai	P.yu Shyo Den	„ and tiles	„ 4,000	2 „	10	—	59
Ko Shyo	Higashi Gokason	Chyo Zo Mei	Bricks	G.Y. 2,000	1.5 „	7	cub. tsubo	52
Ko Sei Shyo	Chyuka Ai	To Chyu Kei	Bricks	S.Y. 1,200	3.2 se	7.5	—	32
Zen Sei Go	Taitochin	Yo Ka Zen	Tile cement	„ 12,000	sq. tsubo 1,500	30	—	18
Fukuwa Shyo	„	So Sin Gyo	„	„ 9,000	970	20	—	17
Fuku Jun Sei	Nishi Gokason	Go Sei Zan	Bean oil extracting	„ 2,000	200	15	—	13
Dotai Yubo	Taitochin	O Shu Sai	„	„ 4,000	140	22	—	12
Kashin Yoshyo	Higashigokason	Chyo Den Shin	Bricks	„ 15,000	3.5 se	12	—	57
Kyo Jun Ko	Nishi Gokason	Ka In Do	„	„ 3,000	3 „	10	—	60
Zen Sei Go	Chyu Ka Ai	Yo Ka Zen	„	„ 5,000	5.5 „	18	—	100
Giwa Yoshyo	„	Yo Sei Kun	„	„ 3,000	3 „	7	—	52
Gi Tai	Taitochin	So Shin Gyo	Cement & tile manuf't.	„ 9,000	sq. tsubo 350	18	—	21
Dotoku Yoshyo	Nishi Gokason	Denkasai	Brick manuf't.	„ 2,000	3.7 se	12	—	35
Bunko Yoshyo	Chyuka Ai S.	Tobun Ka	„	„ 3,000	sq. tsubo 1,900	7	—	41
Dotai Shyoen	Taitochin	Oshyusai	Soya sake	„ 10,000	140	47	—	10
Doshyo Yo Shyo	Shimoshiho	Jyoshypo	Brick manuf't.	„ 3,000	4 se	6	—	62
Fukushyo Yoshyo	„	O Hojin	Tile manuf't.	„ 2,500	1,750 „	42	—	56
Doshyo Yoshyo	„	Sonkanho	Brick manuf't.	„ 2,000	2,400 „	6	—	56
Gentaisho Yoshyo	„	„	Brick tile manuf't.	„ 25,000	2,900 „	248	—	32
Ken Sei Wa	Shyosonshyo	Sokintei	Brick manuf't.	„ 2,000	3.6 se	7	—	45
Koshyo Yoshyo	„	Jyochedu Shyu	„	„ 1,600	2,000 „	10	—	37
Shyori Yoshyo	Kotoshi	Ryushu	Tile manuf't.	„ 20,000	1,200 „	270	—	120
Gohatsushunki Co.	Shindenson	Shyoshishun	„	„ 25,000	14,000 „	457	—	140
Fukuwaei	Koseki Gai	Ryu Shizan	Tile & brick manuf't.	„ 50,000	6,000 „	400	—	100
Kyusei Koshyo	Taiseichin	Kogakusei	Socks, towels, etc.	G.Y. 10,000	—	33	—	28
Zuishyowa Tekko Co.	„	Kankei Gyo	Casting	S.Y. 4,000	—	40	—	35
Eijun Tessyo	Taitochin	Denden Toku	„	„ 4,000	—	64	—	23
Yukoshyoseiga Co.	Ashi Str	Oshaku Shi	Tile & cement manuf't.	„ 5,000	—	118	—	27
Kinbasai Yojo	Shiho	Fuhei Ki	Tile, brick manuf't.	„ 10,000	—	58	—	101
Zensei Go	Taitochin	Yokazen	Cement, tile manuf't.	„ 12,000	—	30	—	101
Seizan Renga Co.	„	Soshingyo	Brick manuf't.	„ 6,000	—	—	—	83

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	No. of workers
Shokoso Hisho	Taiseichin	Ojin Kyo	Hides, etc., salting	S.Y. 50,000		cub. tsubo 75	11	
Dowa Sei	"	Butenkawai	"	" 100,000		" 78	24	
Chinkisan	"	Ryobonchin	"	" 85,000		" 54	13	
Kotaiseigo	"	Shyofukuko	Hides	" 15,000		" 30	12	
Fukujun Genki	"	Toshikin	Tallow manuf't.	" 1,000		" 18	5	
To Jun Sei	"	Kan Kei Tai	"	" 2,000		" 38	8	
Fuku Jun Sei	"	K Ei Kichiron	"	" 1,000		" 20	8	
Toku Gen San	"	So Rei Ho	"	" 2,000		" 40	23	
Do Shyu Sei	"	So Kichi Zo	"	" 1,000		" 24	9	
Toku Ko Sei	"	Uran Den	"	" 1,000		" 17	10	
Bun Ko Go Mokko Co.	Taitochin	Shitsu Bunka	Wooden box manuf't.	" 5,000		" 60	20	
Chyu Wa Koshi	"	Jyosei Shyo	Dyer	" 2,000		" 60	16	
Gen Yo Ko	"	Yosei Kun	Strong sake manuf't.	" 4,500		" 50	14	
Gitai Shyo	"	Gyu Sekichin	Sake	" 4,000		" 10	9	
Chyuka Waranawa Bos- hyoku Co.	"	Chyo Chyu Tei	Straw rope	" 1,000		" 20	9	
Genki Hiryō Sezo Co.	Chyoan Str.	Kirin Fu	Soap	" 1,000		" 80	11	
Kashin Koshi	Soko	Shyu Gakuki	Cotton yarn	" 2,000,000		4,670	15	
Seiki Shin Ryuhin Sei- saku Sho	Rison	Kinko Ichi	Willow wares (trunks, etc.)	" 9,600		400	30	

AMERICAN FACTORY IN TSINGTAU

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	Employees
Kaiji Yoko (Wm. Katz)	Yamato Str.	Wm. Katz	Refrigerator	\$800,000	sq. tsubo 1,688		3 boilers	20

JAPANESE FACTORIES IN SHIHO AND RISON JURISDICTION

Name	Location	Proprietor	Industry	Capital	Area of site	Factory	Power	Employees
Naigai Men Kaisha	Shiho	The Co. U. Takahashi	Cotton yarn	G.Y. 16,000,000	sq. tsubo 34,870	cub. tsubo 6,372	600 H.P.	1,680
Takahashi Koppun Kojo	"		Bone power, oil	" 200,000		" 400	—	25
Shiho Renga Seizo Co.	Kotoshi	M. Takehara	Bricks	S.Y. 2,000	3,200	48	—	30
Saihara Saiseien Co.	Kaihakuga Kou	K. Saihara	Salt refining	G.Y. 50,000	3,600	120	—	20
Taito Seien Co.		Y. Shimizu	Salt refining, grind- ing, sake	" 50,000	500	200	—	23
Santo Kogyo Co.	Soko	S. Tanaka	Cement	" 1,000,000	6,676	1,320	350 H.P.	180
Fukuryu Match Co.	"	The Co.	Matches	" 500,000	2,500	428	—	120
Santo Yogyo Co.	"	M. Ito	Fireproof earthen pipe, etc.	" 500,000	13,519	420	12.5 H.P.	60
Yurin Yoko Saiseien Kojo	"	Y. Watanabe	Salt refining	" 50,000	1,800	260	—	Jap. 4, Chi. 20
Towa Koshi Coke Seizo Co.	"	S. Miyake	Coke	" 100,000	8,864	906	8 H.P.	Jap. 6, Chi. 100
Santo Yofun Co.	Sashiko	T. Uesugi	Vegetable gelatine	S.Y. 2,000	100,000	170	—	64
Kozan Renga Co.	Kozan	U. Iwaki	Bricks	G.Y. 200,000	20,000	850	25 H.P.	100
Sareisho Renga Co.	Sareisho	"	"	S.Y. 100,000	10,000	230	—	70

CHINESE FACTORIES IN SHIHO AND RISON JURISDICTION

Name	Location	Proprietor	Industry	Capital	Area of site	Factory dimension	Power	Employees
Kotoshi Renga Co.	Kotoshi	Fu Hei Shyo	Tiles, bricks	S.Y. 10,000	Permitted to dig. tsubo 150	cub. tsubo —	—	38
Kashinboeki Co. Kiryu Kojyo	Soko Rison	Shu Shu Shi Kin Ko Ichi	Cotton yarn Willowware	„ 1,200,000 „ 3,200	49,430 600	3,985 125	800 H.P. —	1,200 18

JAPANESE FACTORIES ALONG THE SHANTUNG RAILWAY LINE

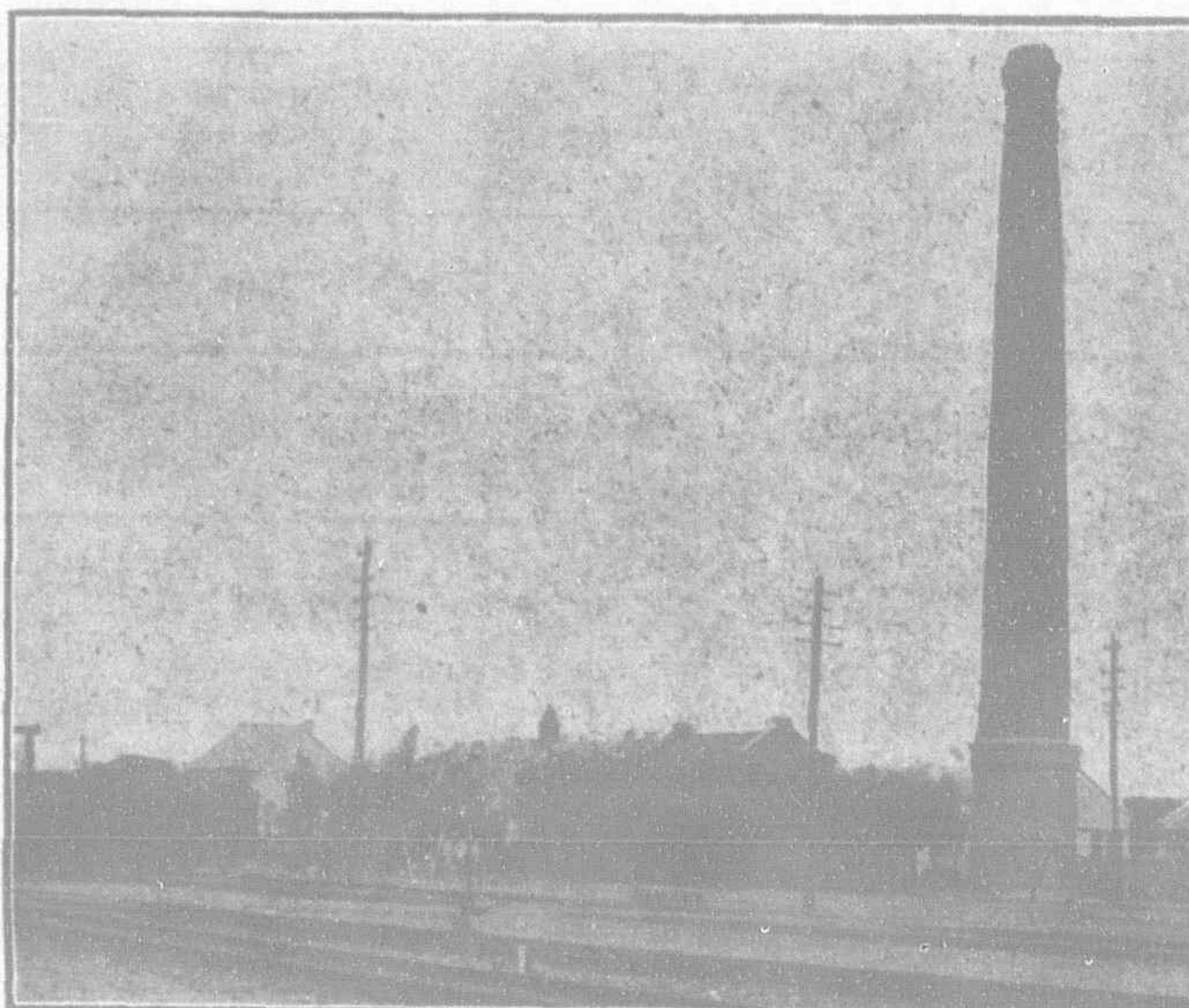
Name	Location	Proprietor	Kind of work	Capital	Space of site	Building area	Power	No. of workers
Seito Engyo Co. Nanwan Kagaku Kojyo	Nanwan	The Co.	Brine, soda industry	G.Y. 300,000	sq. tsubo 4,601	cub. tsubo 636	15 H.P.	Jap. 10 Chi. 80
Boshi Tanco Co.	Boshi	„	Coal mine	„ 3,000,000	1,500,000	620	160 „	720
Boshi-Higashi Tanco	„	Nikka Kogyo Co.	„	„ 500,000	21,463	510	120 „	586
Santo Koppun Co.	Chyoten	Y. Tamba	Bone powder	„ 100,000	400	80	—	17
Nisshikeitan Co.	„	The Co.	Egg products	Head Office furnishes	720	180	—	50
Seitoshishyo Branch	„	K. Suzuki	Cocoon dealer	„	1,000	182	—	40
Santo Menfun Co.	„	T. Fugisaki	Flour mill	G.Y. 67,000	160	40	20 H.P.	10
Kumegumi Kawara Co.	Nantei	The Co.	Bricks	S.Y. 2,000	200	40	—	40
Santokogyo Branch	Shisen	„	Lime	„ 6,000	87,000	40	—	21
Nikkayogyo Branch	„	„	Bricks	G.Y. 20,000	72,000	80	—	51
Toyo Boeki Co.	Hakusan	M. Wada	Dye sand	S.Y. 30,000	500	10	100 Pans	23
Towa Co., Coke, Factory	„	S. Miyake	Coke	Head Office furnishes	1,720	200	8 H.P.	63
Nikkayogyo Branch	„	The Co.	Fireproof earthen bricks, pipes, etc.	G.Y. 350,000	6,000	944	50 „	146
Chyuka Tanshyo	Sainan	The Co.	Egg products	G.Y. 1,000,000	2,190	917	110 H.P.	225
Taisei Co., Branch	„	„	„	Head Office furnishes	2,560	302	—	180
Toa Tanpun Branch	„	S. Tsuji	„	G.Y. 500,000	6,000	2,500	45 „	Jap. 12 and Chi. 65
Manshuseifun Branch	„	The Co.	Flour, cereals	„ 3,000,000	2,500	1,020	400 „	Jap. 15 and Chi. 65
Nanshyo Yoko	Iken	K. Suzuki	Dry cocoon, tobacco leaf	„ 10,000	—	150	—	21
Sakaguchi Yoko	Shyoraku	T. Ishibashi	Egg products, etc.	„ 500,000	—	50	—	10
Ando Yoko	Chyoten	G. Ando	Hides, etc.	„ 100,000	—	300	—	5
Rengaseizo Kojyo	Nantei	N. Tsuchiya	Bricks	S.Y. 5,000	—	—	—	70
„	„	Kumegumi Co.	„	„ 2,000	—	—	—	40

AMERICAN FACTORIES ALONG THE SHANTUNG RAILWAY LINE

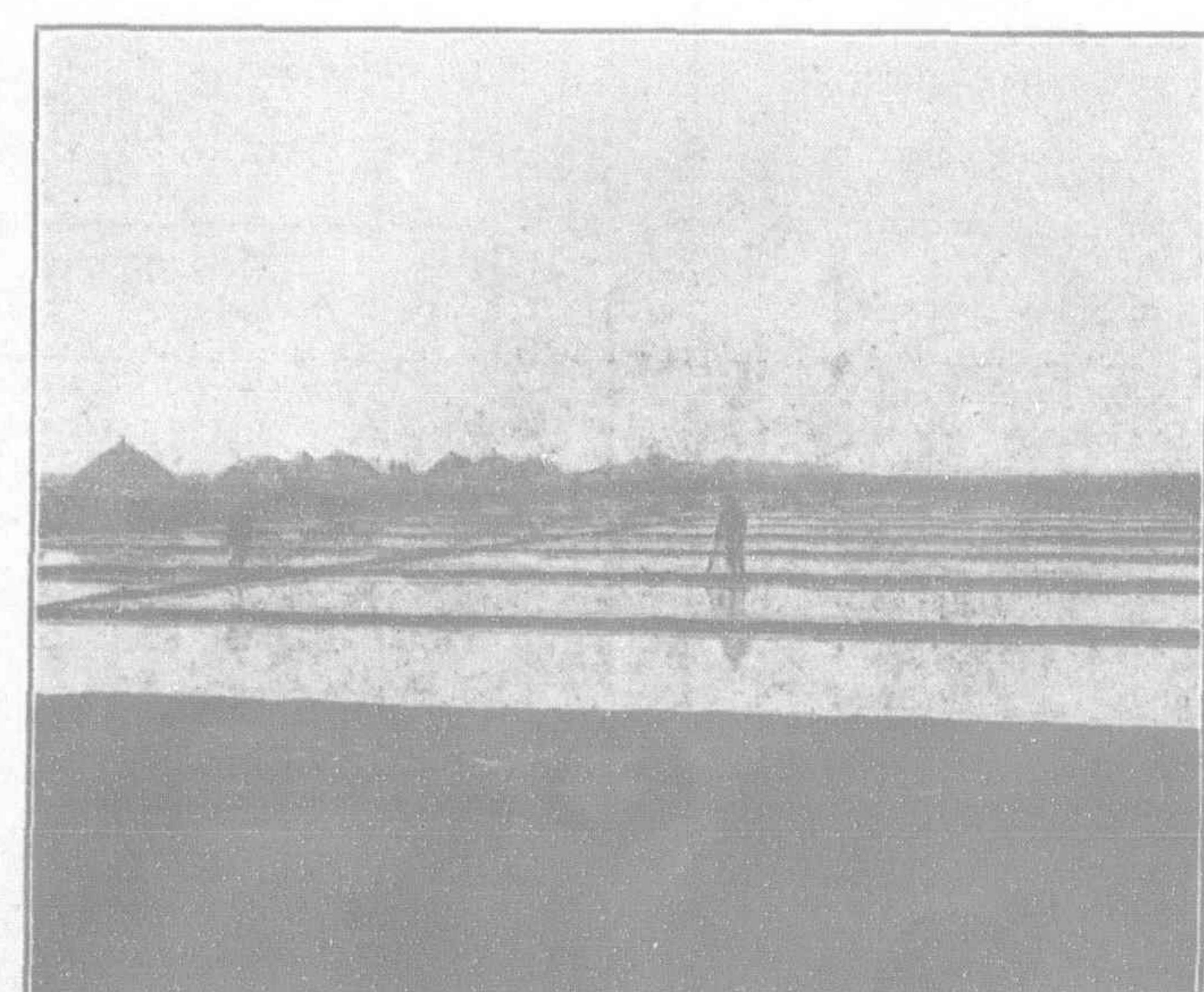
Name	Location	Proprietor	Kind of work	Capital	Space of site	Building area	Power	No. of workers
Nijuriho Ebei en koshi	(Ershili pu) Ni-jyuriho	B. A. T. New York, U.S.A.	Tobacco leaf buyers	—	sq. tsubo 29,600	cub. tsubo 10,000	2 Drying machines	American 20 & Chi. 90

CHINESE FACTORIES ALONG THE SHANTUNG RAILWAY LINE

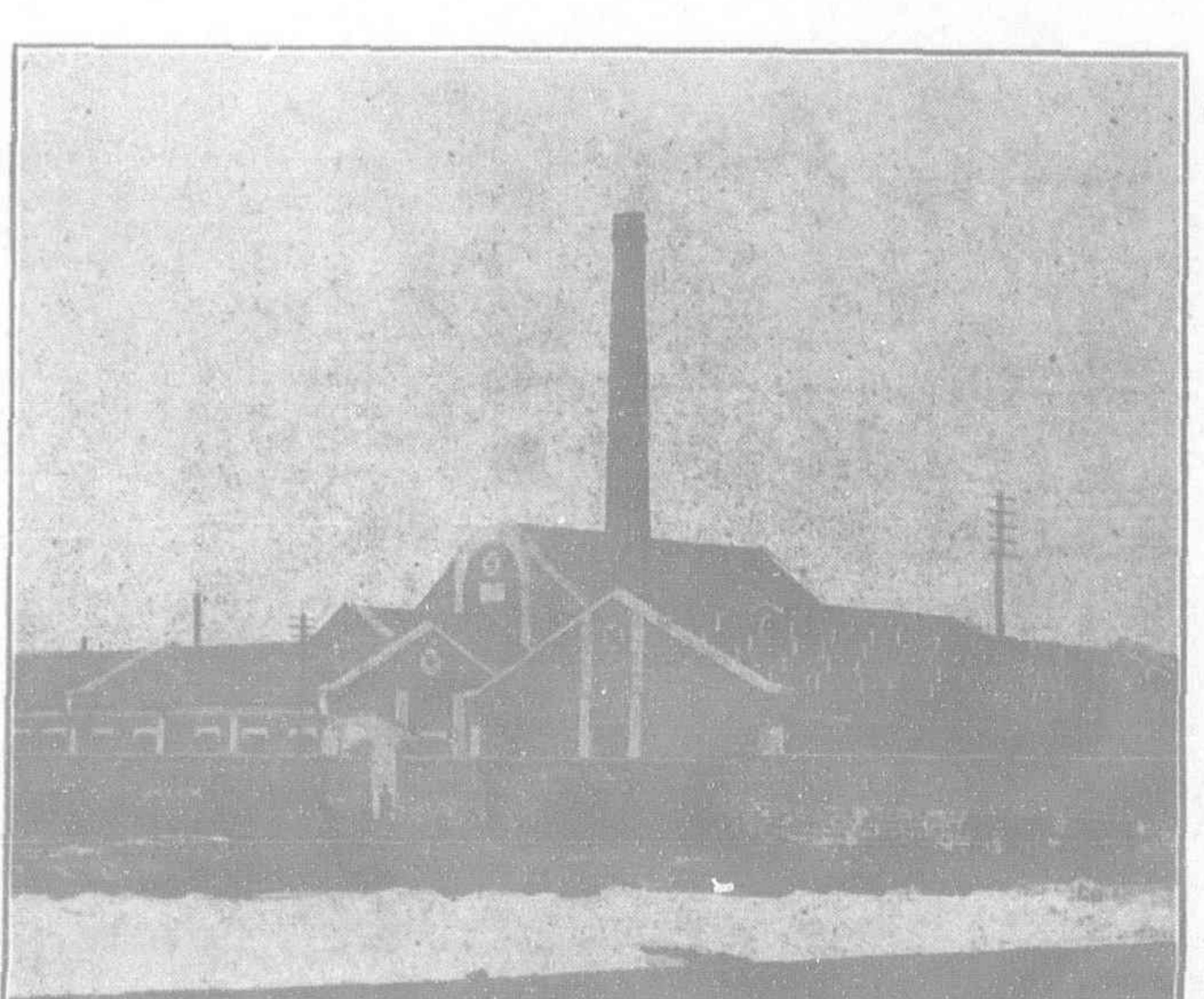
Name	Location	Proprietor	Kind of work	Capital	Space of site	Building area	Power	No. of workers
Jin Waro	Hakusan	Risogyo	Thread glass	S.Y. 2,000	sq. tsubo 90	cub. tsubo 60	—	12
Jinwa Sei	"	Seki Gyoku Rin	"	" 2,500	" 60	" 50	—	18
Giwa Ro	"	Kakugi San	"	" 32,000	" 120	" 40	—	22
Chyo Tai Ro	"	Jyo Kei Ei	"	" 2,000	" 400	" 250	—	22
Taiwa Yo	"	Ko Ko Tei	"	" 30,000	" 200	" 40	—	60
Gyokusei Ko	"	Chyo Roku	"	" 25,000	15 se	200	—	52
Ko Ko Ko	"	O. Kan San	"	" 10,000	180 tsubo	100	—	34
Hakuko Shyo	"	Okei Jyun	Iron work machinery	" 20,000	sq. tsubo 40	—	—	—
Hakusan Dento Co.	"	Su In Chin	Electric current	" 500,000	" 570	173	150 H.P.	80
Yukodo Yoshiki Seishi Co.	Shuson Sub'b	Rikei shyo	Silk filature	" 300,000	18,700	293	100 machines	Jap. 2 and Chi. 11 300
Do Ho Yoshiki Seishi Co.	Shuson Ins'd	Chyo Shi Gai	"	" 400,000	9,216	275	140 "	500
Ritaigo Shushyo	Jyorei	Yoshakurei	"	" 1,000	—	69	—	13
Shyotaigo Shushyo	"	O Shaku Ko	"	" 2,000	—	40	—	14
Hosei Go Yubo	"	O Ishin	"	" 1,000	—	28	—	8
Hoshin Koshyo	Ankyu Ken Denkashyo	Dengakukei	Bean oil extract	" 3,000	—	30	—	5
Tokusei Go	Hakusan	Okakan	Colored chalk	"	—	—	—	—
Kaikichiro	"	Okitei	Red dye sand	" 1,600	—	180	—	6
Jun ko Koki Menfun Co.	Saina	Chyoshakushaku	Glass (pane)	" 1,000	—	24	—	8
Kojunfuku Kiki Menfun Co.	"	Chyosaishin	Flour mill	" 15,000	—	—	—	—
Sainan shingyo Kashi Co.	"	Soryo Hitsu	Flour and oil mill	" 130,000	—	—	—	—
Chyohoshyokusen Co.	"	Chin Chyushyo	Matches	" 250,000	—	—	—	—
Taihoku Koshyo	"	Bakeikai	Blankets	" 20,000	—	—	—	—
Kayo Zoshikoshi	"	Kashun Ko	Weaving	" 4,000	—	—	—	—
Kindan Taima Menshyo	"	Yogen Ryu	Paper mill	" 1,000,000	—	—	—	—
			Flour mill	" 10,000	—	—	—	—



Electric Light Plant at Fangtze, Shantung



Salt Works near Tsingtau



Toa Egg Drying Co.'s Works, Tsinanfu

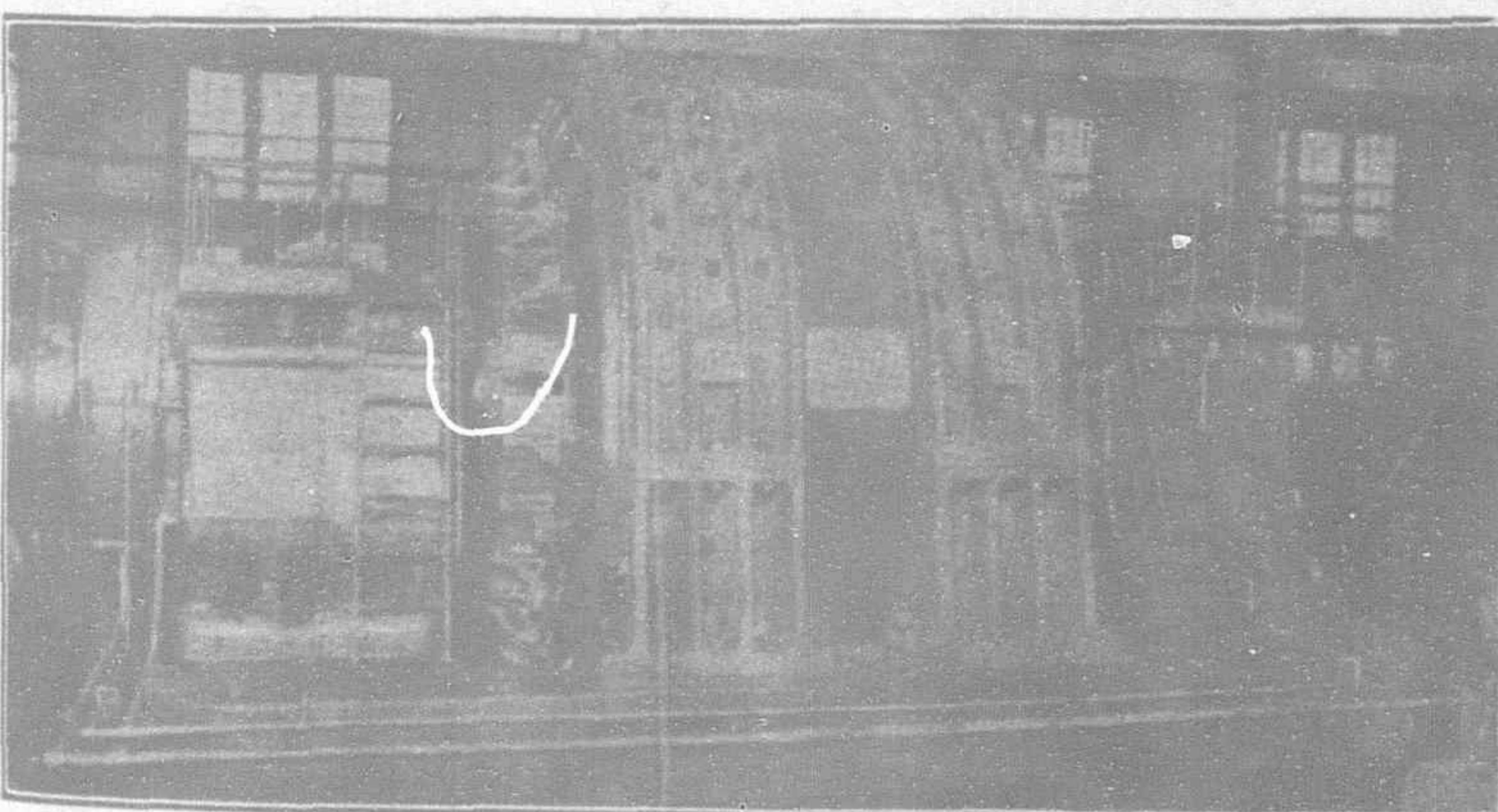
FAR EASTERN IRON AND STEEL

A bill with reference to the fundamental policy relative to the Japanese iron industry and shipbuilding, which had been studied and deliberated on by the government and the public for more than half a year, was approved on February 14, at an extraordinary general meeting of the Financial and Economic Research Society. Accordingly, Mr. Hara, the president of the Society, immediately took the necessary steps to submit a report to the government, the principal points of which are as follows:—

1. The fundamental policy for the development of the iron industry in Japan is self-supply, and, to achieve this end, the following measures are to be adopted:—First, a syndicate should be organized among the iron works with a view to distributing products and acquiring raw materials. Secondly, for the protection of the iron industry, 10 per cent. of *ad valorem* duty is to be imposed upon imported pig-iron, and 15 per cent. upon imported iron and steel, but steel for the use of shipbuilding is to be exempted from import duty. Thirdly iron and steel in the sphere of application of the conventional tariff is to be subsidized to the same amount as the tariff above-mentioned as long as the conventional treaty exists. Fourthly, in case domestic steel be used in shipbuilding, a subsidy is to be granted based on import duty, and those who are carrying on iron industry are to be exempted from income-tax as well as business tax for ten years, and protection is to be extended to the electrical iron industry as well as to transportation by sea and land of materials for the iron industry. Moreover, the supply of raw materials for the iron industry is to be insured, and the iron industry carried on by Japanese in Manchuria and other places is to be protected to the extent that the iron industry at home will not be obstructed.

2. The fundamental policy in connection with shipbuilding in Japan lies in the attainment of self-sufficiency and, to accomplish this end, measures should be taken as follows:—First, general protection, namely, in view of inadequate methods in encouraging shipbuilding in the past, the import duty be waived in respect of steel and timbers to be used for the building and repair of vessels and also import duty be removed from newly invented articles and special articles such as equipments for vessels, etc. Secondly, government vessels as a principle be constructed at home dockyards and the law of navigation subsidy be continued in effect for the sake of encouragement and the import duty upon vessels be reserved subject to revision, and measures be taken facilitating the circulation of funds in abundance at low interest for long term loans, and a shipping laboratory be established. Thirdly, transports and other special shipping be subsidized in respect of the building expenditure and expenses for navigation.—*Exchange*.

NEW DIRECT-CURRENT REVERSING MOTOR FOR STEEL MILL DRIVE.—The motor illustrated below has recently been completed by the General Electric Company for the Tata Iron & Steel Company, Sakchi, India. It is a double unit machine rated 6,300 h.p., 80 r.p.m. with a speed range from 60 to 100 r.p.m. Speeds from 60 to 80 r.p.m. are secured by means of generator field control and from 80 to 120 r.p.m. by motor field



6300-h.p., 80 r.p.m., Direct-current Reversing Motor for Steel Mill Drive; 22,000-h.p. Momentary

control. Power is supplied by a flywheel motor-generator set, consisting of a 6,500 h.p., 375 r.p.m. induction motor and two 2,500-kw. generators. The flywheel weighs 50 tons and the motor is normally operated non-reversing, but may be quickly stopped and reversed when necessary. The armature of the motor weighs 132 tons and was the heaviest crane lift on record in the shop in which it was built.

JAPAN'S IMPORTS FROM GREAT BRITAIN.—Discussing the iron and steel figures for December, 1920, a British analyst writes: Japan took 1,758 tons of plates not under $\frac{1}{2}$ -in., compared with 1,672 tons in December, 1919, while only taking 474 tons of plates under $\frac{1}{2}$ -in., as against 3,120 tons

in 1919. In tinned plates and sheets China's import increased from 1,050 tons in December 1919, to 3,090 in 1920, but Japan's 1919 figure of 3,310 tons had shrunk to 28 tons. The export of textile machinery shows increases both to China and Japan, the former increasing its trade from 306 tons to 947 tons and the latter from 1,014 tons to 2,025. Japan's import of steel bars, angles, etc., decreased from 1,808 tons in December, 1919, to 969 in the corresponding month of 1920.

JAPANESE IMPORT DUTY RESENTED.—There is much opposition in Japan to the proposed import duty on iron. The protestants state that Japanese iron of to-day can by no means stand comparison with foreign iron in regard to output, quality and cost of production, and that it would be wiser to grant subsidies to the manufacturers than attempt an increase of the tariff.

PHILIPPINE OUTPUT.—The division of mines of the Philippine bureau of science has published statistics covering the mineral production of the Islands for the year 1919. The iron and iron ore figures are: Iron, 67 metric tons, P. 34,964; iron ore, 18,598 metric tons, P 92,990.

NEW CHINESE STEEL WORKS.—The military governor of Hupeh province, China, plans the erection of a large blast furnace at Huangshih-kang port, on the Yangtze river, a few miles below Hankow and Hanyang. These furnaces are intended to handle ores of the Hsiang Pishan iron mines in the vicinity.

IRON AND COPPER WORKS, JAPAN.—The Nagashima Shoten Co., Ltd., was recently organized in Tokyo for the sale of iron, copper and other metals. The business representative is Mr. Riichiso Nagashima. Office: 12 Gensuke-cho, Shiba-ku, Tokyo.

NO JAPANESE "DUMPING."—Exporters who are primarily concerned with prospects in the Far Eastern markets and believed that Japan holds the key to that situation by resale activities, will be interested to note the following cable advices from commercial attache Abbott in Japan:

"Though the Japanese pig iron market is dead," he states, "there seems to be no probability of any considerable dumping. Some exporting was done by a steamship company owning idle steamers and a surplus stock of pig iron. There is more or less continuous filtration of pig iron from Hanyeh-ping into the Pacific Coast. The factor involved is that of carriage, and depends upon transpacific tonnage rates competing with transcontinental rail rates in America."—*New York Journal of Commerce*, January 5.

INDIAN IRON ORE DISCOVERY.—The discovery of quantities of iron ore in South Singhbhum, India, has resulted in a number of applications for prospecting licences and mining leases, and an official examination shows that the most important iron deposit in the district is about three miles south-west of Gua, reaching about ten miles to the Kolhan-Keonjhar boundary east of Naogaon. Good quality ore is found in several other places in the vicinity and the Kolhan hematite usually contains 64 per cent. iron, with little phosphorus and sulphur. It is believed that the deposits in this district must total some millions of tons, but the chief disadvantage is the comparatively inaccessible nature of the country.—*Times Trade Supplement*.

Plans are reported to be afoot in Japan for amalgamating the iron and steel industries and making them self-supporting.

Through the prevailing gloom in the iron and steel trades comes a welcome ray of sunshine from Britain. After it had been closed for two years for reconstruction purposes, the first steel furnace of the North Eastern Steel Works has restarted work. It is understood that more furnaces will be starting shortly.

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

The Japanese Government Railway Program.—A new railway net program, announced by the government, extends over 6,000 miles, including lines already completed. It includes a new line from Hachioji, Tokyo prefecture, to Takasaki, Gumma prefecture, via Hanno, Saitama prefecture, and two new lines affecting Kanagawa prefecture. The last two comprise one from Osaki, near Tokyo to Matsuka, via Nagatsuda, and one from Yokosuka to Uraga.—Yokohama Chamber of Commerce Journal.

Dairen Imports Rails from U. S.—A cargo of one hundred pound rails for 30 miles, which the South Manchuria Railway Company ordered from the Carnegie Steel Works, has been landed at Dairen. The company intends to retrack the line with the heavier rails in place of the 60 or 80 pound rails now in use gradually, so as to enable the big locomotives to travel at their full speed.

Construction of the Changchow-Amoy Railway will be Resumed.—The gentry of Fukien province plan to resume construction and to complete the whole line of the Chongchow-Amoy Railway which was started twenty years ago. "The estimated cost is about \$1,800,000, including expenses for erecting wharves, bridge-constructions and purchasing rolling-stock. The ministry of communications has approved the project and has donated \$500,000 and will supply the balance in 8 per cent. Industrial Bonds issued by the ministry on the security of the surplus of profits on the Peking-Hankow Railway."—*Shun Pao*.

Loan Authorized for Indo-Chine Line.—The French chamber of deputies has passed a bill authorizing the government of Indo-China to issue a 6,000,000 piastres lottery loan, for the purpose of construction of the projected railway from the port of Dong-hoi (Annam) to Vinh-long (on the Mekong River, Lower Cochinchina). The bill is now before the senate.—French Wireless.

Bond Issue for Railway Construction, Japan.—The Japanese government is issuing ten million yen of Exchequer Bonds for railway construction and extension, expiring on June 1, 1925. The interest is five per cent.

Hsi-Kuang Plans.—The Chekiang merchants plan to construct the Hsi-Kuang railway so as to connect the two provinces of Chekiang and Anhui in order to promote the silk and tea industries. The civil governor of Chekiang (Shen Ching-chien) is to have a survey of the line made. The undertaking will cost about \$3,000,000 which the Chekiang merchants intend to subscribe.

Harbin - Blagoveschensk Line.—Manchurian merchants are raising \$3,000,000 for the purpose of building a railway between Harbin and Blagoveschensk. They have requested the Chinese government to cancel the concession which was formerly granted to the Russo-Asiatic Bank. Details:

(1) To nullify the railway agreement formerly concluded between the Chinese government and the Russo-Asiatic Bank with regard to the construction of the said Harbin-Heilungkiang Railway; (2) to issue Domestic Bonds to the extent of \$6,000,000 to be shared equally by Fengtien, Heilungkiang and Kirin, for the establishment of the Harbin-Heilungkiang Bank; (3) to proceed with the preliminary construction work between Hulun and Hai Lan comprising an area of 200 *li*, leaving the rest to be constructed at a future date when additional domestic bonds can be issued.

Chinese press reports say that the Peking government approves this plan.

Pasha Extension of the S.-H.-N. Railway.—The Ningpo-Pasha branch of the Shanghai-Hangchow-Ningpo Railway 20 *li* further to Shar-poo is proposed. The plan of the Shanghai-Hangchow-Ningpo Railway board has been sanctioned by the ministry of communications.—*Shun Pao*.

New Japanese Railway.—Plans for building a railway between Matsumoto City and Kamitakara, Japan, a distance of forty miles, have materialised. After making a survey of the proposed permanent way, Mr. Isakai, engineer, has reached an understanding with the property owners.

Government Railway Line in Japan.—A government railway line between Hojo to Katsumura will probably be finished in 1926. The ten-mile construction between Hojo and Matsuda will be completed in April next. The line runs from Matsuda to Katsumura through Amatsu, Kominato and Chiba prefecture, a distance of 22 miles. The estimate for this line is Y.5,490,000.

Chinese General Wants to Build Railway.—General Feng Yu-hsiang has petitioned Peking to build a Yiencheng-Chowkou branch of the Peking-Hankow Railway in Honan. Yiencheng is situated on about the centre of that section of Peking-Hankow Railway traversing Honan, and the construction of an Yiencheng-Chowkou line is only to extend approximately 30 miles eastward from the trunk line.—*Shun Pao*.

Perhaps, Perhaps Not!—Nearly half of the projected Chefoo-Weihsien line has been surveyed. It was recently planned to build a branch of this line from Dasintien to Tenchow, but as it would take too much time and expense to build this branch owing to the long distance through hilly countries, it is suggested that a trunk line should run from Weihsien via Wanghsien and Tengchow to Chefoo. This would shorten the way by nearly ten *li* less than it would take to build a branch.—*Shun Pao*.

TRAMWAYS

New Japanese Tramway.—The construction of the new tram line in front of Tokyo Station, between Gofukubashi and Otamachi, has made considerable headway and will be opened early this month. The new service will be a great benefit to railroad passengers alighting at the station.

Electric Lines for Tokyo Suburb.—In view of the rapid increase of population in suburban district of Tokyo two new electric railway lines have been projected by influential business men. One of the projected lines will be laid between Nakashibuya and Otsuka, near Sugamo, its length extending for 10 miles. The other line will start at Shinjuku and reach the bank of the Tamagawa, the line covering 15 miles. Both lines will connect with the Yamate line of the government railway.

Osaka Suburban Electric Tramway.—At present electric tramways are running from Osaka City to Hanshin, Hankyu, Hankai, Keihan, Taiki and Koya. A new suburban line will shortly be opened, probably in April, running between Umeda and Suida, under the management of the North Osaka Electric Tramway Co.

New Tramway Line, Saga.—Mr. Kixi Takashi, with some forty associates, plans to build a new tramway line in Saga prefecture, running between Isohayamachi and Ushizumachi, a distance of forty

miles. The capital is Y.4,000,000, and permission is now being asked from the home department. An office will be opened at Isohayamachi, Saga, and a branch office at Tara Mura.

Amalgamation of Electric Tramway Companies in New Enterprise.—The Iyo Electric Tramcar Co. in Matsutama City, Yehime prefecture, will shortly amalgamate with the Innoshima and Kuse Electric Companies to supply electric power from Yehime prefecture to the mainland Sanyo-do across the Inland Sea.

The Shanghai Electric Construction Company, Limited.—With a view to bringing the capitalisation of the Company more nearly into accord with the value of its undertaking, the directors have decided to recommend the increase of the capital from £320,000 to £400,000 and the capitalisation of £80,000 of undivided profit by issuing as a bonus 8,000 fully paid shares of £10 each (giving one new share for every four shares now held). The new shares will not rank for dividends payable out of the profits of the year 1920.

Notices of meetings to consider the necessary resolutions will be issued in due course.

The directors have declared a second interim dividend of 6 per cent. (12/- per share) less income tax (payable on the 1st February) in respect of the year 1920. The final distribution which it is anticipated will be the same as last year will be announced in the usual course when the accounts for the year are ready for submission.

ELECTRIC LIGHTING, POWER, ETC.

Japanese Railway Electrification.—Investigation of hydro-electric possibilities is being made by engineers in Kanagawa, Shizuoka, Yamanashi, Nagano, Saitama, Chiba, Ibaraki, Fukushima and Miyagi prefectures under the direction of the Japanese government board. This is in connection with the plans for the general electrification of the Japanese government railways. It is proposed to utilize possible power from the prefectures mentioned for the electrification of the Yokohama-Numatzu and Ofuna-Yakesuka railway lines, and also in the north-east neighborhood of Tokyo.

Osaka Electrical Estimates.—The preliminary estimates of Osaka's electrical department for the current year total Y.16,806,900, including Y.2,099,400 for reconstruction and rolling-stock.

Ujikawa's New President.—Mr. Kiyoshi Kimura, a director of the Osaka Shosen Kaisha, has been elected president of the Ujikawa Electric Co., succeeding the late Mr. Ukagawa.

New Power House at Shakako.—The South Manchuria Railway Company's Electricity Works started in the spring of 1919 on a site near the Shakako Waterworks the construction of a new power house. The installation of the boilers and other machinery has been completed recently, leaving the motors the only items to be installed. According to the present plan, the management intends to conduct a trial operation early in September, so as to open the new power house to work from October 1.

Tateyama Electric Co., Ltd., Tokyo.—This company was organized recently for the sale of electrical machinery. They have a capital of \$1,000,000, quarter paid up, and their managing director is Mr. Teijino Yamamoto. Address: Itchome, Sakuma-cho, Shiba-ku, Tokyo.

Kyushu Amalgamation.—The Kyushu Hydroelectric and the Kakata Electric Company have

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discussed amalgamation for some time past. Besides these two companies, Kumamoto, Kago-shima, Miyazai Electric and several other electrical enterprises will be joined in this amalgamation, and a large concern organized with a capital of Y.200,000,000 in Kyushu.

Hydro-Amalgamation.—Permission has been given for the amalgamation of three Japanese firms, the Nihon Hydro-Electric, the Kiso Hydro-Electric, and Osaka Sogen.

Electric Machinery Co., Tokyo, Japan.—The Saito Electric Co., Ltd. has been recently organized in Tokyo to import and export electric machinery and tools. The capital of this company is Y.25,000, fully paid up, and the managing director, Mr. Tomekichi Saito. Address: 28 Shinbori-machi, Shiba-ku, Tokyo.

Electrical Industrial Co., Ltd., Tokyo.—The Taiyo Electrical Industrial Co., Ltd. was organized recently in Tokyo for the sale of electrical machinery and tools. This company has a capital of Y.100,000, quarter paid up, and their managing director is Mr. Soichiro Otsuka. Address: 74 Tanimachi, Ichigaya, Ushigome-ku, Tokyo.

New Electric Light Company, Soochow.—In the same way as the Peking Chinese Electric Light Power Company, the Soochow electric light company is now in serious trouble with its various clients and customers over the poor quality of the light supplied by the company. On account of this, Mr. Liu and some wealthy Chinese merchants and officials have organized another electric light company to compete with the existing company and the latter is losing heavily. The management of the old company has approached the British consul-general in Shanghai for help because it owed a rather considerable sum of money to Jardine, Matheson & Co. for loans; but the local Chinese authorities will not interfere with the new company on the ground that the old company enjoys no exclusive rights.—*Asiatic News Agency*.

TELEPHONES, TELEGRAPHS, CABLES, WIRELESS

Wireless Plants, Japan.—A new wireless plant is nearing completion in Tomioka. Another plant is to be started near Osaka, this month, which will be operated in connection with the Tomioka plant.

Wireless Station, Otaru.—A wireless station is shortly to be installed at Otaru, at an estimated cost of Y.6,000,000. Major-General Kishimoto recently went up to Otaru, Hokkaido, to investigate and choose the site, 30,000 *tsubo*. It is hoped that building will be started some time in April.

Wireless for Osaka.—The Japanese government is establishing a wireless station in Osaka at an estimate of Y.200,000. The work of construction will be undertaken shortly.

Underground Telephone Installation, Yokohama.—Underground telephone installation was started on February 20 at Yokohama, from Choja-machi to Yamawaki-cho, a distance of 1,200 *ken*. This new enterprise is hoped to be finished in May.

PUBLIC WORKS

Hainan Island Development.—The civil administrator of Hainan is proposing the issue of domestic bonds to the amount of \$2,000,000 for the development of the resources of the region.

Ten Million Pesos for Philippine Public Works.—The Philippine Congress has voted ten million pesos for public works.

PORT WORKS, HARBORS AND DOCKS

Opening Chinien as a Commercial Port.—Mr. Pan Fu, vice-minister of finance, submitted a memorandum to the Peking government, petitioning the opening of Chinien, Shantung, as a commercial port in conjunction with the opening of Lungkow port, Shantung.—*Shun Pao*.

Calcutta's New Dock.—The Duke of Connaught recently laid a commemoration stone on the site of the new King George Dock, Calcutta, which will berth 35 ships and will have a water area of 190 acres.

BRIDGES

Bridge at Kanda.—The building of the Hitokuboshi bridge at Kanda is nearing completion. This was started in August, last year, at an estimate of Y.100,000, and has been constructed in the old Japanese style with the old type of lantern. The foundations are of reinforced concrete.

Railway Bridge on Shanghai-Hangchow-Ningpo Line.—A bridge is being built across the Shouwu River within the Ningpo-Shoushing section on the Shanghai-Hangchow-Ningpo Railway.—*Sin Wan Pao*.

WATERWORKS

Waterworks, Tai Hu Lake.—The director-general of the Soochow waterworks requests the Peking government to approve the proposal that a loan of \$400,000 be borrowed from the Chuang Yeh Bank in Peking with \$1,000,000 government bonds pledged as security. The proceeds of the loan will be utilized to promote the waterworks of the Tai Hu Lake.

Tsinan Waterworks.—In Tsinanfu, capital of Shantung, no waterworks have been established since it was opened as a commercial port. Now many prominent personages of the city are planning to organize the Tsinan Waterworks as a joint stock enterprise of the provincial government and merchants of Shantung. The total capital, which will only be subscribed by Chinese (one-third by officials and two-thirds by merchants), will be \$1,000,000 divided into 10,000 shares. Construction will start as soon as \$300,000 capital is collected, and will operate over the whole area of the city.—*Sin Wan Pao*.

BUILDINGS

Extension of Fukien Arsenal.—The Fukien arsenal, which was placed under provincial control at the request of the late General Li Shun, will be extended during this year. An order for machinery able to turn out 600 machine-guns a year has been placed with the Shanghai arsenal. It is understood that the order will be filled and shipped to Fukien by the end of June.

Osaka's New Town Hall.—The new town hall which is being built at Nakanoshima at a cost of Y.3,600,000 will be completed in the middle of April.

New Police Station at Kita Shin-Machi.—The Haraniwa police station of Houjo-ku, Tokyo, has recently purchased 300 *tsubo* of land at Kita Shin-machi for their new building, and are starting to build.

New Building for Hankow Bund.—An imposing addition to the palatial blocks of buildings along the Hankow Bund will be the new building of the Chinese Maritime Customs House of Hankow, the erection of which will be proceeded with at an early date. The design of the new building, selected from a number of plans submitted, is by Mr. H. E. Stewardson and Mr. H. M. Spence,

of the firm of Stewardson and Spence of Shanghai. They are the designers of the new Jardine, Matheson & Company buildings of Shanghai. The proposed new building, a four storey one, will be in the form of a hollow square with the principal facade surmounted by a clock tower, pillared and fretted and of an imposing and pleasing design. The dimensions of the new building are approximately 130 feet by 125 feet with a height of some 75 feet for the main building and 150 feet from the ground level to the summit of the clock tower. Reinforced concrete will be largely used in the construction, the three principal frontages being faced with grey Honan granite.

New Site for University, Tokyo.—The Tokyo Women's University president, Dr. Mitobe, has recently purchased 260,000 *tsubo* of land between Kishaji and Ogikubo, for the erection of a new building. It is hoped to start this in the autumn.

Loochoo Fortress.—The reconstruction of the fortresses at Uraga, Kata, Yura and Imahary is in progress, reports the *Jiji*, in accordance with the fortress reconstruction scheme passed by the Diet in the last session. The journal reports, further, that a new fortress will also be constructed in the Loochoo Islands, and another in the Bonin Islands, thus completing the first defensive lines on the Pacific. The preliminary land survey has been completed, and the work will be taken in hand early in April.

Peking Disapproves Harbor Scheme at Hsiaotsingho.—The scheme of constructing a harbor at the mouth of the Hsiaotsingho river by introducing capital from an American source, which is recommended by General Tsao Kun, may not be sanctioned by the Peking government, the government realizing great opposition to be raised by both foreigners and Chinese, as the project will affect Tientsin trade.—*Chinese Press Report*.

MINES, MINERALS AND METALS

Cobalt, Queensland.—The imperial mineral resources bureau has issued a statement relating to a cobalt deposit 19 miles south of Selwyn, in the Cloncurry district of Queensland. The chief ore-mineral is cobaltite, averaging 33 per cent. of cobalt and 40 per cent. of arsenic. A considerable amount of development has been done on the lode, and ore has been raised to the surface, averaging 10 to 25 per cent. cobalt. It is not stated whether this ore is being marketed or not; probably an outlet is being sought.

Siam.—The dredging property of the Renong Dredging Company on the western coast of Siam will be exhausted in two or three years. No. 1 dredge has sufficient ground to keep it employed for two years and No. 3 for about four years. No. 2 dredge has already been transferred to the new property at Rasa, in Selangor, and will commence operations there by the end of the current year. Nos. 1 and 3 will follow it when their work is completed at Renong. Some particulars of the Rasa property were given in the February issue.

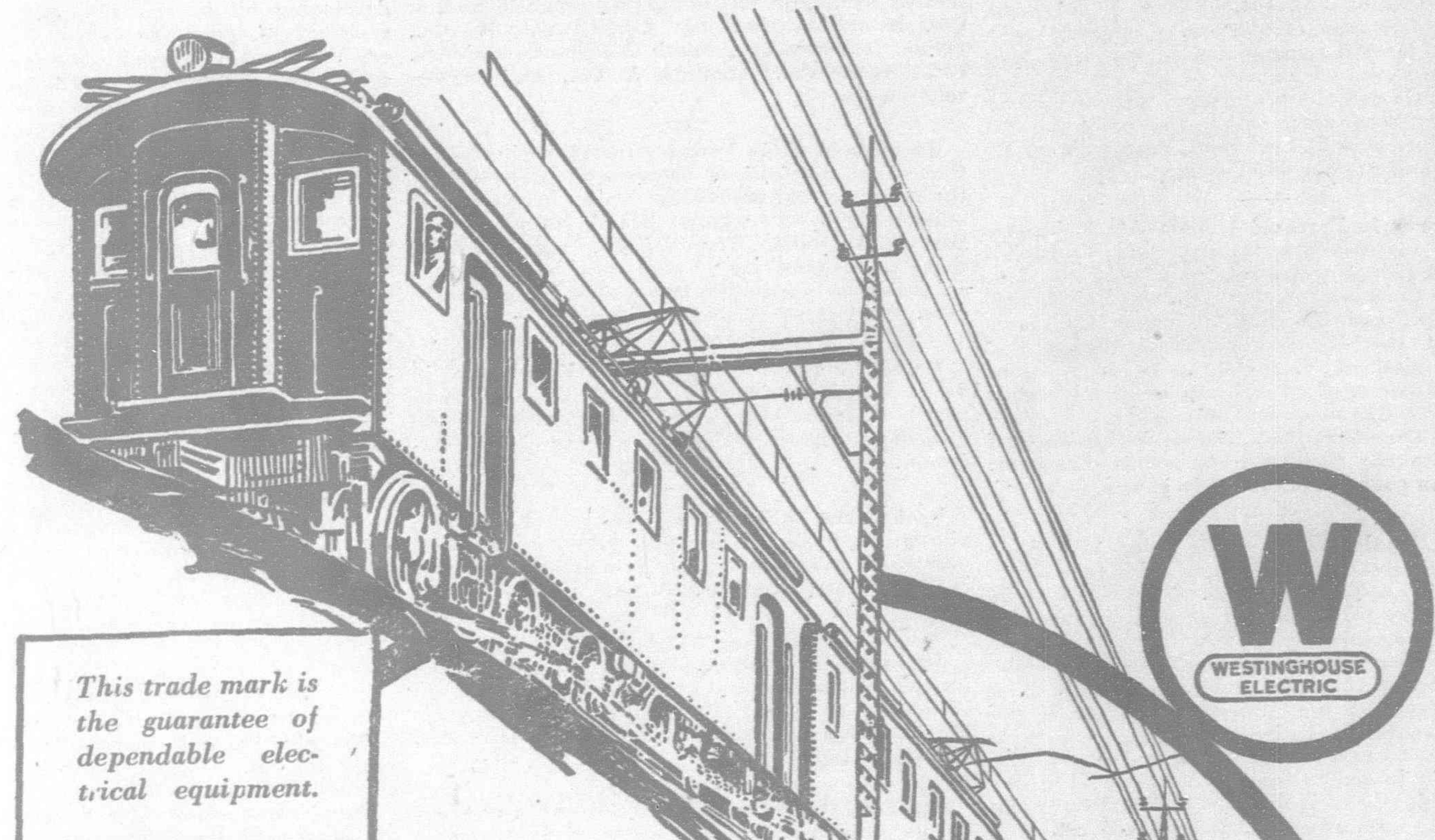
India.—The Nundydroog Company is to be reconstructed, and new capital raised, in order that development shall be continued at depth. The present equipment is only capable of dealing with operations to 4,000-ft. in depth on the incline. In order to provide facilities for deeper working, a circular shaft was commenced some time ago, and it still requires to be finished. Mr. C. H. Richards, the superintendent, mentions the necessity of sinking two other vertical shafts. Before these three shafts come into operation, development below 4,000-ft. will be done by means of main winzes. The directors ask for £170,000, and the proposal is to reconstruct the company with a liability of 6s. per 10s. share. The developments in depth are sufficiently good to warrant the expectation that the mine will continue to yield profitable ore. The Ooregum, to the south, contains profitable ore at a considerably greater depth, and recently the Balaghat, to the north, has developed rich ore in depth near the Nundydroog boundary.

The yearly report of the North Anantapur gold mine shows that the directors and managers

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have little hope of further discoveries of payable ore, and the operations will not be continued much longer. As regards other properties, the first copper prospect examined has proved disappointing, but another, also in Chota Nagpur, is affording much better hopes of success.

Japan's Mineral Output.—The output of leading mines throughout Japan for last October was 174,030 *momme* of gold, 3,528,204 *momme* of silver, 1,152,505 *kin* of copper, 5,405 tons of iron, 1,977,107 tons of coal, 161,802 *koku* of petroleum oil and 2,334 tons of sulphur. Compared with the result for the same period of last year gold production shows an increase of 5.3 per cent. but all other minerals show a general decrease, silver decreasing 2.0 per cent., copper 15.3 per cent., iron 25.9 per cent., coal 15.2 per cent., petroleum oil 4.0 per cent., and sulphur 49.1 per cent.

Phosphorus in Paracele Island.—Mr. S. Hirata, when he was travelling through Paracele Island, discovered phosphorus, and, as a result of this, the Nihon Chemistry Manure Co., the Dai Nippon Manure Co., and the Kanto Oxygen Co., have established the Jirata Phosphorus Mining Co., with a capital of Y.1,000,000. It is rumored that the amount of phosphorus on the island is about 10,000,000 tons, and assays at thirty-two per cent. The shares are Y.25 each, and it is hoped to complete the first payment within the year. The Taiwan government will help in this.

China's Metal Imports.—The value of China's metal imports was \$76,931,631 in 1919, as compared with \$21,619,174 in 1913. The advance in value coincides with an equal advance in quantity. Copper ingots were imported in very much larger quantities than ever before and the value was more than 100 times as great as in 1913. The copper imported is used almost exclusively by the mints. Manufactured iron shows considerable gains. There was a large increase in the importations of tin in slabs. This is a product of the Kwangsi mines, and is reimported from Hongkong after having been exported there from China.

Ochanomizu, Museum, Tokyo.—A mining exhibition will be held, with the help of the education department, in Tokyo, from March 21. When the list was closed (January 20) 169 firms had entered, and over 12,000 exhibits were pledged. The exhibition will be divided into mining history, mining products, mining improvements, mining art and progress. The chief exhibitors will be the Tokyo and Osaka arsenals, naval arsenal, fishery institute, imperial museum, north-east imperial university, Tokyo art school, Akita mining school, Mitsui Mining Co., Japan Petroleum Co., Mitsubishi Industry Co., Takato & Co., Okura Industry Co., South Manchuria Railway, Oki Electric Co., Asanuma & Co., and Matsuzaka-yu Co.

Queensland Buys Yampi Mineral Rights.—The Queensland government proposes to proceed with the state iron and steel works project in purchasing mineral rights to Cockatoo Island, Yampi Sound, Western Australia. The minister of mines declares that the manufacture of steel from such rich ore as found at Yampi Sound would be extremely easy.

Metal in Soviet Russia.—Metal industry in Soviet Russia will enjoy better conditions than in previous years. Besides 77 furnaces and 69 Marten's furnaces, 32 more will be built.—*Exchange.*

Phosphorus Mining Near Lasa Island.—A rich phosphorus mine has been discovered on an island near Lasa, and after investigation and examination the results are favorable. Mining will be started very shortly.

Japanese Oil-fields.—A syndicate has been formed for the exploitation of the North Saghalien oil-fields, comprising the well-known companies Mitsui, Kuhara, Oitsubishi, Fugita and Sumitomo. Capital, Y.100,000,000.

Standard Oil in the P.I.—To relieve the pressure on its California supplies made by its Oriental

trade, the Standard Oil Company has made plans for drilling operations on the Bondog Peninsula, Island of Luzon, Philippines. A party of drillers, says "The New York Herald," with full equipment for wildcatting, including tools, boilers, lumber, etc., has arrived at Bondog with a thousand tons of drilling machinery, the work to be done by the Richmond Petroleum Company, the subsidiary which has been doing the Standard's wildcat work in New Mexico and Colorado.

If the Standard of California is successful in developing oil in the Philippines in quantities sufficient to make the exploit commercially successful, it will be the only American company producing oil in the Orient. The old Standard Oil Company of New Jersey prior to the dissolution of the trust drilled in Japan, but subsequently sold all of its holdings to the Nippon Oil Company, withdrawing entirely from the Japanese empire. The Standard of New York some years ago drilled wildcat wells in China, but failed to get oil in commercial quantities and besides was unable to get a satisfactory permanent concession.

Plans which depend upon the outcome of the drilling operations include the erection of a refinery probably at Manila, where it will be the closest one to the Chinese market, with the exception of those in Japan. It will also be closer to Australia and New Zealand.

It is the intention to construct roads in the Philippines. The Bondog Peninsula is a virtual jungle, with no roads except native carabao trails, and no equipment can be moved inland until roads have been built. There is no harbor and all supplies will have to be transferred by lighters from the steamer as it lies at the mouth of the Pagsanghan River.

INDUSTRIES

Shanghai Sugar Refinery.—The Cantonese sugar merchant, M. Y. San, has established a sugar refinery in Shanghai for the improvement of the Chinese sugar trade with foreign countries and, at his request, the Peking government has agreed

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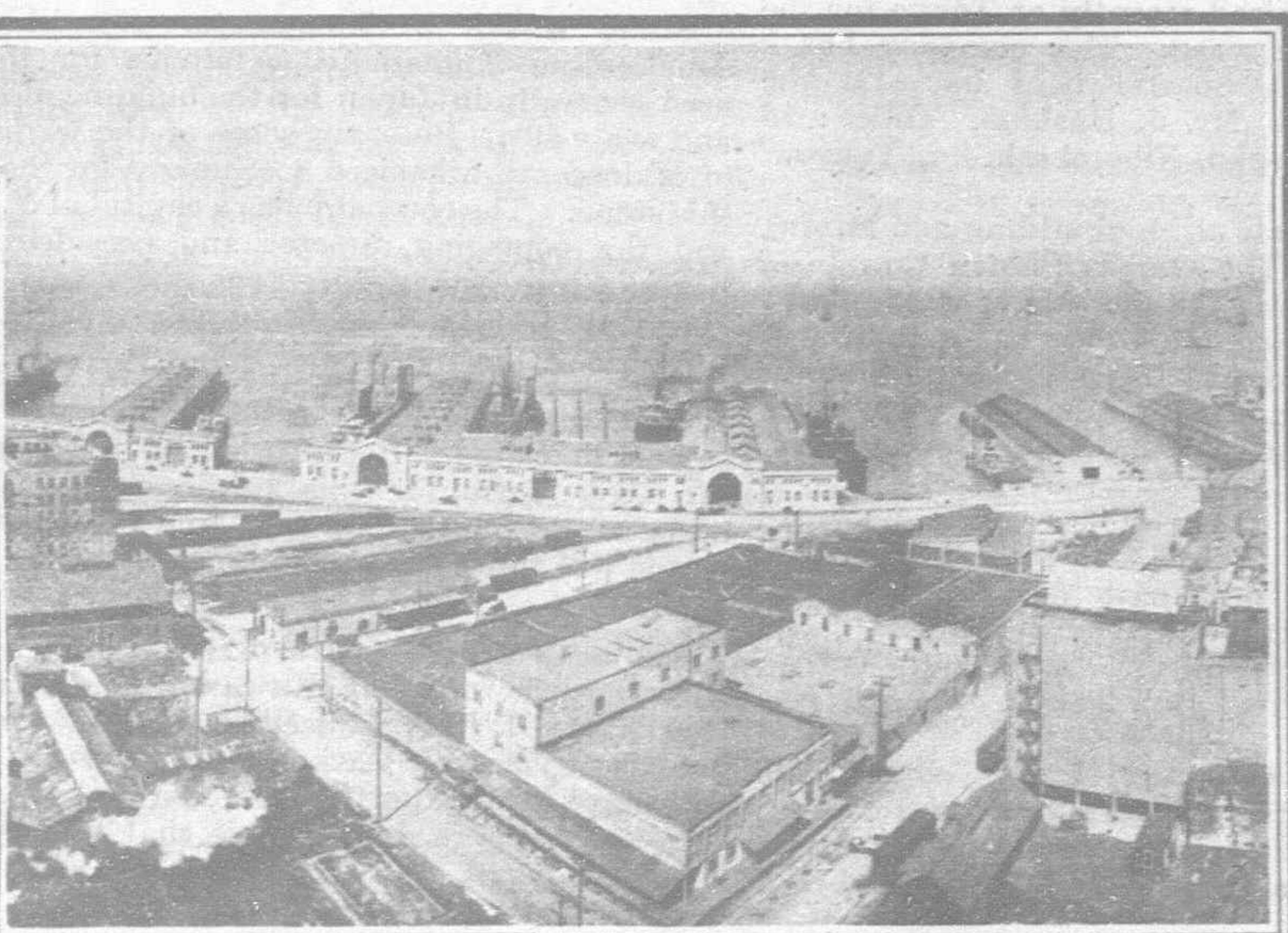
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Coal and Cement Works, Osaka.—The Hanabatake Shoten Co., Ltd., has been organized for the sale of coal and cement, and building materials. The business representative for these works is Mr. Zenzo Hanabatake. Address: 1 Nichome Higashi, Ichinimachi, Sakai city, Osaka.

Lumber Factory, Tokyo.—The Taiyo Lumber Co., Ltd., was organized recently at Tokyo for the sale of lumber and wood. This company has a capital of Y300,000, quarter paid up, and the managing director is Mr. J. Hashino. Office: 16 Sanchome, Honkaku-cho, Nihombashi-ku, Tokyo.

Factory for the Sale of Shipbuilding and Mining Materials, Tokyo.—The Omura Shoten Co., Ltd., was organized recently for the sale of shipbuilding and mining materials. This firm has a capital of Y.500,000, fully paid up. Their managing director is Mr. O. Omura, and the address of their office is 10 Itchome, Higashi Minati-cho, Kyobashi-ku, Tokyo.

Bicycle Factory, Tokyo.—A limited company, Maito & Co., was organized recently in Tokyo for the sole of bicycles and their accessories. The representative of this firm is Mr. T. Irihara. Office: 52 Kikugawa-cho, Houjo-ku, Tokyo.

Tanaka Trading Company, Ltd., Tokyo.—This company was recently organized for the sale of coal and lumber. The representative of this firm is Mr. S. Tanaka, and their office is: 11 Aioi-cho, Kanda-ku, Tokyo.

Mining Works, Tokyo.—The Japan Colonial Industrial Co., Ltd. was organized recently for the sale of mining materials. This has a capital of Y.50,000, quarter paid up, and the manager is Mr. S. Yamaguchi. Their office is: 28 Yedogawa-chom Kaishi Kawa-ku, Tokyo.

Nail Factory Started at Osaka.—The Hagiwara Shokai Co., Ltd. was organized recently for the sale and manufacture of all kinds of nails. Their representative is Mr. O. Hagiwara, and the office address is: 697 Kizu, Imamiya-cho, Osaka-fu.

Stone Works, Tokyo.—The Naikaku Industrial Stone Co., Ltd., was recently organized in Tokyo. This company has a capital of T.2,000,000, quarter paid up, and is for the sale of stone of all kinds. The managing director is Mr. Seiryo Awazu. Office: 25 Yoshino-cho, Asakusa-ku, Tokyo.

Coal and Coke Factory, Tokyo.—The Tsukatani Coke Factory, Ltd., has been organized recently in Tokyo for the manufacture of coke, and to sell coke and coal. Their representative is Mr. Fukui-

shino Tsukatani. Office: 141 Ogimachi, Fukagawa-ku, Tokyo.

Briquette Factory at Karatsu, Kyushu.—The Mitsubishi Mining Co., of Karatsu, Kyushu, are organizing a briquette factory. They will have an annual output of about 2,000,000 tons a year, and machinery has already been ordered from Great Britain. As soon as the machinery arrives, the manufactory will start work at once.

Stone Works at Kumamoto.—Haraishi Yama, Amakusagun-Kumamoto, is famous for its stone used generally in Japan for the building of harbors, and sea-walls. Recently some of the leading men of Kumamoto organized a company for the sale of this stone. The company has a capital of Y.300,000 and the managing director and president is Mr. Kamskachiro Nakanishi.

Cotton Cultivation by the Oriental Company.—The Oriental Colonial Co. has a plan to cultivate cotton in China. Recently they purchase land of 5,000 *tsubo* for this purpose in the neighborhood of Santo Railway, and cultivation of cotton will start in the coming May.

Asano Cement Manufacturing Co.—This company has factories at Kawasaki and Hakodate, Hakkaido. It has produced 500,000 casks monthly, but, on account of slackness in trade in Japan, they have been exporting to India and China since last year, with good results, so that this exporting will continue.

Glass Works, Japan.—The Takinami Glass Works, Ltd., has recently been organized in Tokyo for the sale and manufacture of glass ware, etc. The managing director is Mr. S. Sasaki. Address: 57 Itchome, Taihei-cho, Houjo-ku, Tokyo.

Cigar Box Possibilities in the P.I.—Information received by the foreign trade department of the San Francisco chamber of commerce from the bureau of commerce and industry of Manila points out that the cigar box industry in the Philippines would be given impetus if a big demand in the United States would be created among cigar dealers and manufacturers.

"There is an abundant supply of Calantas wood here which is specially suitable for the manufacture of cigar boxes," the communication says.

"It is estimated that an investment of \$75,000 would put up and operate a factory with a capacity of 1,000,000 boxes a month. It is further estimated that 100 boxes unnailed could be manufactured here for \$10.50 or for a lower amount."

American Trade in the D.E.I.—Vice-Consul Horace Remillard, in his report on the Dutch

East Indies, says "there are two factors which appear vital, if the United States is to hold its present position, especially in the import trade of the Dutch East Indies. Longer credits and more liberal terms must be accorded local buyers. Irrevocable credit was required during the war in anticipation of the sharp decline in the price of manufactured articles, sure to follow the cessation of hostilities. Now, this circumstance no longer exists, and German, British, and Dutch competition is in the field with most tempting offers, based on a wider and freer credit."

The bulk of the American trade with the Dutch East Indies during the last few years is the result of enforced circumstances resulting from the war; the United States was one of the few countries capable of either receiving or supplying merchandise. If the trade acquired is to be conserved, large American importing concerns, preferably working in conjunction with Dutch capital, should be established rather than represented in the Dutch East Indies. It is believed that various American manufacturers could combine to work in common, pool expenses, and open offices in the colony. At present a large part of the American effort is in long-range correspondence, which is slow and unsatisfactory.

Practically all other countries, even those European nations with comparatively smaller interests, are all represented by large importing and exporting companies which are in direct touch with the consumers. It is also worthy of note that with the exception of rubber, there are practically no large American plantation investments in the colony, although the substantial returns of recent years would appear to warrant such investment. Two of the most encouraging features of 1918 have been the opening of two American banks in Batavia and Soerabaya, and the practical assurance of direct and regular steamer connection between the Dutch East Indian Archipelago and the United States under the American flag.

AIRCRAFT

Organization of Aviation Bureau.—The Peking government has approved the plan submitted by the chief of the aviation department to the effect that an aviation bureau be organized.

Aeroplanes at Nogoya.—The branch works of the Aichi Tokei Company, Nogoya, started to make aeroplanes some time ago, and recently completed one that was tried by the Yokosukei Naval Aviation School. This proved so satisfactory that the Aviation Corporation ordered two more from this factory, which are now in course of construction.

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ROADS

Shanghai-Wusieh.—Plans for the road from Shanghai to Wusieh are under way. A survey will be made and the road routed so that it will run between the railroad and the seacoast touching important inland cities that need a means of communication with a port. It will not parallel the railways or waterways but will open new territory to better commerce.

Peking-Tsinan Main Road.—Survey is being undertaken for the building of a main road from Peking to Tsinan via Sinchen, Yunghsien, Yung-chen and Zenchiu, and practical work is expected to start this month.—*Sin Wan Pao*.

Peking Roads to be Improved.—Minister Chang Chih-tan who is also director-general of the metropolitan municipal council has decided to improve the roads of Peking. The first step will be to make all the main streets five feet wider, and have the drains covered.

Nantungchow Road.—An extensive scheme of building roads running through all the twenty-one districts of Nantungchow is in progression. The scheme is to build three main roads and five branch roads to a total length of about two hundred miles, each to be macadamized and thirty Chinese feet wide. To meet the cost of this the local authorities will appropriate \$300,000 every year from the fund assigned to the Nantungchow river works by the road construction bureau for a term of ten years. It will take about six hours only for a passenger to travel round the whole Nantungchow city when the work is completed.—*Shun Pao*.

MOTORS

Tsaikowfu-Urga Motor Transport Service.—A joint board of the ministry of communications and the Peking-Suiyuan Railway has drawn up a plan for the reorganization of the motor-transport between the Peking-Suiyuan R.R. rail-head and Urga. Fifty-seven Italian Fiat motortrucks have been ordered for the service, twenty of which have already arrived in China. The rail terminus of the service is to be at Tsaikowfu rather than at Kalgan, in order to avoid the difficult ascent of Hunabar Pass.

American Cars in the Far East.—Despite the assertion that the Far East has not yet reached a stage in its highway construction to render it an especially attractive field for the automobile, either for passenger or commercial purposes, American exports of this class to the region are large and rapidly growing. To India, the total for the fiscal year 1920 was, in round terms, 8,000 cars, valued at over \$8,000,000, and to Dutch East Indies about 1,600 cars, valued at approximately \$2,000,000; to Japan nearly 3,000 cars, valued at 2½ million dollars, and to the Philippines, 2,000 cars, valued at approximately \$2,000,000. These figures relate to passenger cars, while the freight automobiles sent to China, the Dutch East Indies, Japan and Philippines in 1920 aggregated about \$3,000,000 in value. Of rubber tires for automobiles, the exports to China, Japan, India, Straits Settlements and Dutch East Indies in 1920 aggregated about \$5,000,000 in value.—*The World's Salesman*.

GOVERNMENT FINANCE

Hainan Bonds.—The civil administrator of Hainan is proposing the issue of domestic bonds to the amount of \$2,000,000 for the development of the resources of the region.

Canton Loan?—The Canton provincial assembly has passed a bill authorizing the issue of a domestic loan of \$5,000,000 for reconstruction purposes. The Provincial Bank of Kwangtung is undertaking to float the bonds.

Japan's Specie Holdings.—Japan's specie holdings at the end of January stood at 2,183 million yen, a gain of 4 million yen as against January 15.

The species held by the government amounted to 872 million yen, a decrease of 12 million yen and that held by the Bank of Japan to 1,311 million yen, an increase of 16 million yen. The total amount retained at home stood at 1,137 and that retained abroad 1,046 million, the former showing an increase of 16 million yen and the latter a decline of 12 million yen.

Loan of \$4,000,000 for C.E.R.—General Sung Hsiao-lien, director-general of the Chinese Eastern Railway, is obliged to approach a foreign party for a loan of \$4,000,000 in order to enable the railway administration to tide over the financial difficulties of the coming year. Recently, a loan of \$2,000,000 was borrowed by the Chinese Eastern Railway from a foreign source. But the amount was so insignificant that it only served the turn of the railway administration for a very short time. The present loan will be utilized to defray the heavy coal expenditures, outstanding police charges, and repairs to workshops of the line in question. A premium of ninety-eight per every hundred is observed and interest is charged at the rate of 8 per cent. per month. It is reported that the loan will be advanced on the 10th instant.—*The Peking Leader*.

BANKS

Pacific Trading Commercial Bank.—Minister Chow Tsu-chi of finance is reported to be organizing a Pacific Trading and Commercial Bank with certain American capitalists with capital of gold \$5,000,000. Eleven directors will be appointed consisting of six Chinese and five Americans. A president and a vice-president will also be appointed, one Chinese and one American. Business will be transacted in Tientsin, Shanghai, New York, California and other places.—*Chinese Exchange*.

New Irving Bank Director.—At the annual meeting of the stockholders of the Irving National Bank of New York, January 11, James Clarke retired as a director and Hubert T. Parson, president of the F. W. Woolworth Company, was added to the board.

Japanese Amalgamation.—The Buzan Bank and the Yokohama Jitsugyo Bank have been amalgamated, and the capital increased to Y.6,000,000. The bank will be known in future as the Shinyu Zinko, and the president will be Mr. M. Kaneko, and the managing director is Mr. T. Funatsu.

COMMERCIAL FINANCE

Japanese Clearing House Returns.—Bills cleared at the Tokyo and Osaka clearing houses during January reached 737,298 valued at 2,013,372,000 yen and 498,619 valued at 1,446,433,932 yen respectively. Compared with the preceding month, those cleared at the Tokyo clearing house represent a decrease of 373,650 in number of bills and of 827,691,000 yen in value, while those cleared at the Osaka clearing house also indicate a decline of 230,660 in number of bills and of 56,408,619 yen in value.

Chinese Stock Exchange at Tientsin.—Pien Yin-chang, chairman of the Chinese general chamber of commerce in Tientsin, in conjunction with other prominent Chinese merchants and capitalists, has established a Chinese stock exchange in the native city dealing in cotton, cotton yarn, furs, hides and foodstuffs. Authority for this step has yet to be secured from Peking.

Japanese Enterprises for 1920.—The capital of the new and extended enterprises in Japan during 1920 amounted to over 6,671,200,000 yen, being an increase of over 2,369,660,000 yen, compared with 1919. The new enterprises were capitalised at over 4,071,230,000 yen, or 1,304,780,000 yen more than in 1919, and old enterprises expanded by over 2,599,970,000 yen, or 1,064,870,000 yen more than in 1919.

Company Amalgamation.—It has been decided to amalgamate the Ishibashi Land and Building Co., Ltd. (capital Y.1,200,000), the Banto Land Company (capital Y.10,000,000) and the Nippon Muki-jo Electric Co., Ltd. (capital Y.4,000,000) with the Takehara Imperial Land Trust Co. The new company is to be called the Nippon Land and Trust Company.

Izu Sea Product Company, Ltd.—Izu Sea Product Company Ltd., organized under above name recently, with a capital of Y.300,000, quarter paid up, for general fishery. Office: 10 Sanchome, Sanjikkei, bori, Kyobashu-ku, Tokyo. Managing director, K. Yiura.

Horaki Coal Mine Co., Ltd.—A meeting of shareholders of this company was held recently to decide the dividend of 12 per cent. profit, and to choose three new directors.

Kaikoku Fishery Co., Ltd.—This company has been organized for deep sea fishing. Office: 25 Shimmei-cho, Shiba-ku, Tokyo. Representative: I. Kawasada.

New Fishery Company, Hokkaido, Japan.—A partnership fishery company, Kodama Shoten, has been recently organized at Hokkaido. Office: 21 Houi-Minato-cho, Kyabushi-ku, Tokyo. Branch: 3 Akebono-Cho, Hakodate, Hokkaido. Representative: T. Kodama.

SHIPBUILDING

Thornycroft Cargo Steamer.—Good progress in mercantile ship construction continues to be made at the Southampton Works of John I. Thornycroft & Co., Ltd., where their fourth cargo steamer during the last half-year of 1920 was launched on December 22. This latest vessel is a steel single-screw cargo steamer to carry 500/550 tons D.W. which has been built to the smallest of the three standard designs of mercantile vessels. Thornycrofts are now constructing at their shipyard to carry 4,300, 2,000 and 550 tons respectively.

The dimensions of the boat are as follows:

Length O. A.	162'0"
Length B. P.	155'0"
Breadth Mld.	26'0"
Depth Mld.	12'6"
Draft loaded	12'0"
I. H. P.	500
Speed	9½ knots.

General Description: The materials and construction are of scantlings and quality to meet Lloyd's requirements of Class 100 A. I. The vessel has a top gallant forecastle right forward, a short bridge amidships, and a raised quarter deck extending from the bridge to the stern. Accommodation for the ship's officers is arranged under the bridge deck, for engineers in a deck house aft and for the crew in the forecastle. Chart room is arranged on bridge deck with pilot bridge over. There are two cargo holds, separated by a non-watertight steel bulkhead and two masts fitted with cargo derricks and suitable steam winches. Three watertight bulkheads are fitted, one at each end of the machinery space and one at fore end of cargo space. The coal bunkers have a capacity for about 55 tons of coal. Bulwarks are of steel plate fitted with bulb angle rail and provided with freeing ports of ample size. Cargo hatches have steel coamings about 30 inches high in the well, and 24 inches high on the raised quarter deck. The decks to bridges and forecastle are of pine. A combined steam and hand steering gear is fitted on the navigating bridge. The general outfit includes anchors, cables, hawsers, steam windlass, boats, davits, accommodation ladder, galley, etc., as is usual for this class of vessel. The propelling machinery is placed at aft end of the vessel. **Engines.**—The main engines are of triple-expansion type with diameters of 13½-in. H.P., 22-in. I.P. and 35-in. L.P. by 27-in. stroke. The working pressure is 180-lbs. per square inch giving 500 I.H.P. at 120 revolutions per minute. The cooling surface of the condenser is 610 square feet. One return tube type boiler is installed, with Howden's forced draught, size 11-ft. 6-in. in length by 13-ft. dia-

